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ABSTRACT

This report analyzes the incidence of learning disabilities among individuals in Job Training Partnership Act (JTPA) and other employment training programs and the impact of these learning disabilities on programmatic approaches to functional literacy assessment and training. The report examines the proportion of target individuals likely to be learning disabled (LD), the state of the art for testing and assessing adults to identify learning disabilities, the state of the art with respect to providing basic and occupational skills instruction to learning-disabled persons, and local and national level actions needed to ensure that learning-disabled persons eligible for employment and training programs are properly served. The report concludes that 15 to 23 percent of JTPA Title II participants may be LD and 25 to 40 percent of other federal employment training participants may be LD. To diagnose the disability, comprehensive procedures are available which must be administered and interpreted by experienced, specially training professionals. Recommendations include combining basic skills instruction with functional occupational skill instruction and avoiding arbitrary referral of persons with low reading skills to possibly inappropriate remediation programs. Appendixes describe studies estimating literacy and functional literacy and studies estimating the LD population. A list of learning disability subtypes, informal learning disability checklists, resources for providing instruction to LD adults, and guidelines for providing work-related training to LD persons are also provided. (Approximately 100 references) (JDD)

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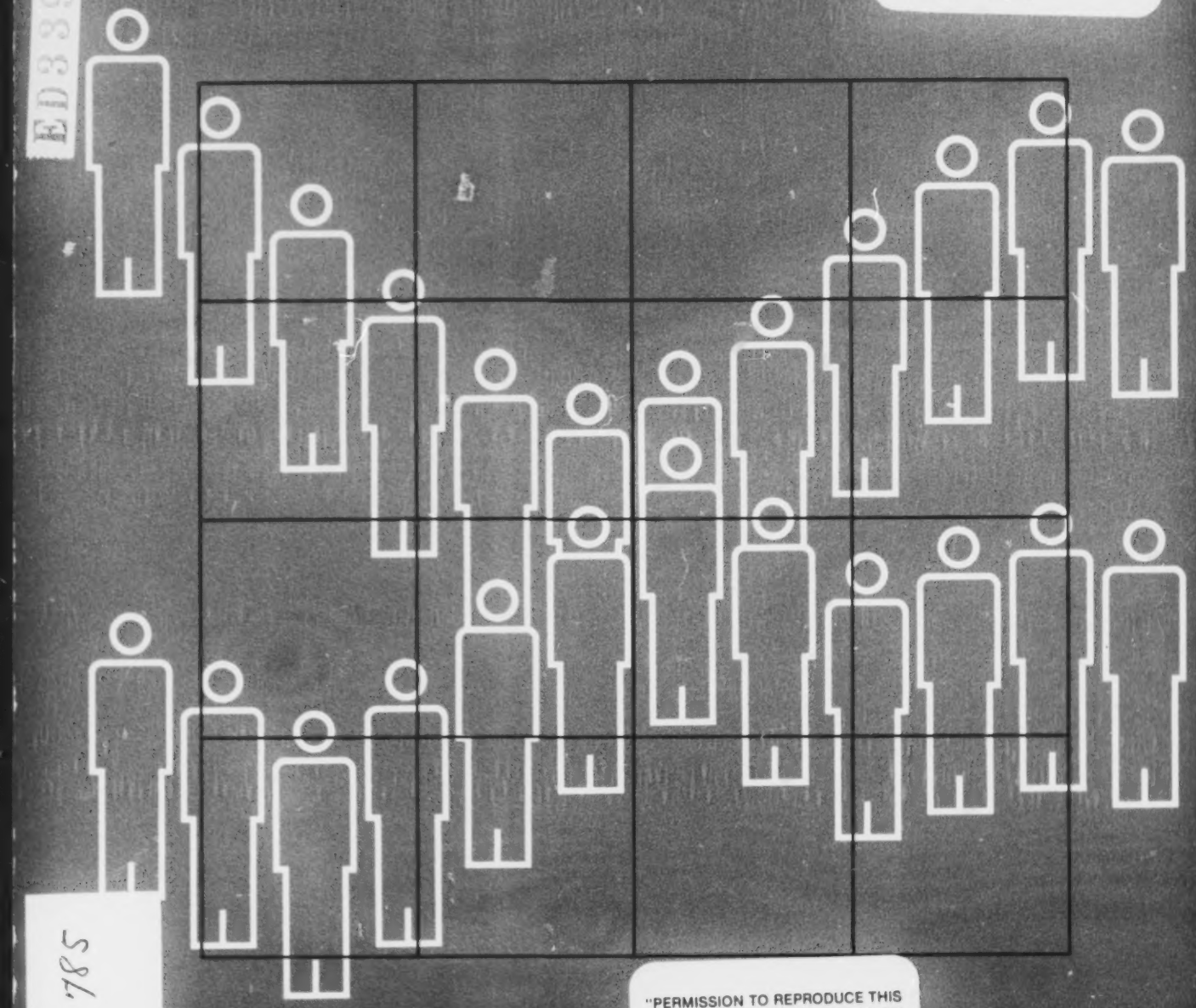

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The Learning Disabled In Employment and Training Programs

Research and Evaluation Report Series 91-E

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Office of Strategic Planning and Policy Development
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EXECUTIVE SUMMARY

The employment problems of individuals who are functionally illiterate or deficient in basic skills has recently become a policy concern in the Administration and in Congress. A related concern is that a substantial number of functionally illiterate or basic skills deficient persons may, in fact, be learning disabled. If a substantial proportion of persons in Job Training Partnership Act (JTPA) and other employment and training programs who have been identified as functionally illiterate are learning disabled, it may be necessary to reconsider programmatic approaches to assessment and training.

Since there are no current statistics on the learning disabled population in employment and training programs, estimates of the proportion of employment and training participants who might be learning disabled were developed in this study by extrapolating from what is known about: (a) persons who are functionally illiterate, and (b) persons who are learning disabled. In addition, this report includes a discussion of the current state of knowledge regarding assessing and training adults with learning disabilities.

WHAT PROPORTION OF INDIVIDUALS ELIGIBLE FOR EMPLOYMENT, EDUCATION AND TRAINING PROGRAMS ARE LIKELY TO BE LEARNING DISABLED?

There is evidence of a high incidence of learning disabilities and functional illiteracy among the economically disadvantaged population. Depending on which of several definitions are used, 20 to 29 percent of economically-disadvantaged adults may be functionally illiterate. Adult basic education (ABE) is the only major program about which there is any information on the number of learning disabled participants: non-empirical studies suggest that between 50 and 80 percent of ABE students (generally reading below the fifth or seventh grade level) are probably learning disabled. Given this apparently high incidence of learning disabilities among "poor readers" and given the proportion of

participants in various programs who are known to have reading levels below the seventh grade level, it is estimated that approximately:

- 15 to 23 percent of all JTPA Title IIA participants may be learning disabled (50 to 80 percent of those identified as reading below the seventh grade level), and
- 25 to 40 percent of all adults on Aid to Families with Dependent Children (AFDC) and in the Job Opportunities and Basic Skills (JOBS) Program may be learning disabled.

WHAT IS THE CURRENT STATE OF THE ART FOR TESTING AND ASSESSING ADULTS IN ORDER TO IDENTIFY THE PRESENCE OF LEARNING DISABILITIES?

There are numerous tools available for identifying learning disabilites, ranging from informal checklists to more formal and comprehensive diagnostic packages.

Informal checklists are quick, inexpensive and can be administered by a lay person to preliminarily screen a person for the possible presence of a learning disability. Formal diagnostic procedures range from paper and pencil tests which take about an hour to complete and can be administered by a non-professional; to costly comprehensive batteries which can take several days to complete and must be conducted by specially-trained professionals. Caution must be taken to assure that assessments are conducted and interpreted correctly. This means that although counselors and staff in employment and training programs may be able to screen for learning disabilities, they should not conduct the indepth assessments, but rather refer clients to professional clinicians for complete diagnosis of learning disabilities.

WHAT IS THE CURRENT STATE OF THE ART WITH RESPECT TO PROVIDING BASIC AND OCCUPATIONAL SKILLS INSTRUCTION TO LEARNING DISABLED PERSONS?

In the educational field, there is a broad body of knowledge about teaching learning disabled persons. Much of the knowledge originated with efforts to teach learning disabled

children at the elementary and secondary level, but has recently been adapted for teaching learning disabled adults as well. Although there is very little published information about how to provide occupational skills training to learning disabled persons, many of the instructional techniques originally developed for children are now also being applied in the training setting. These techniques include (a) helping the individual to understand his/her disability and learn compensatory strategies that can be applied in school and at work to overcome the disability, and (b) using non-traditional instructional methods such as un-timed tests, verbal and video rather than written manuals, repitition and review, and one-on-one teaching.

Most of the written material on work-related training for adults with learning disabilities has been developed only recently, by the vocational rehabilitation community, in part because federal guidelines in the early 1980s required state and local vocational rehabilitation programs to include learning disabilities as a condition qualifying a person for services.

Informal discussions with a few JTPA administrators suggest that the JTPA system may not be specifically assessing for learning disabilities or designing training programs for this population, although it is likely that a large number of "poor reading" JTPA participants are learning disabled.

WHAT SHOULD BE DONE TO ENSURE THAT LEARNING DISABLED PERSONS ELIGIBLE FOR EMPLOYMENT AND TRAINING PROGRAMS ARE PROPERLY SERVED?

The review conducted in this study suggests a few recommendations for both local program operators and national policy makers. The local level recommendations focus on ways programs can make modest changes given that a large number of their participants are evidently learning disabled. The national level recommendations focus on filling the existing gaps in knowledge.

At the local level:

- Incorporate appropriate instructional strategies into job search training and pre-employability components. Since a large proportion of JTPA adults who are reading below the seventh grade level may be learning disabled, even if a program does not routinely screen for learning disabilities, it would make sense to integrate into group components some of the simpler instructional techniques (e.g., small groups, video and verbal material rather than just written manuals, verbal and untimed tests) that work well for learning disabled persons.

- Combine basic skills instruction with functional occupational skill instruction. Learning disabled persons benefit from a training program that integrates basic education (e.g., reading and math) with applied functional skill development (e.g., clerical or machinist training). Such training can be done in a traditional classroom setting (e.g., including functional workplace applications in basic reading and math lessons), in a vocational training setting (e.g., teaching basic skills along with vocational training, adapting reading and math to the occupational training curriculum), or in a workplace setting on the job.

- Avoid arbitrary referral of persons with low reading skills to possibly inappropriate remediation programs. Many JTPA and JOBS programs refer persons with low-reading levels to adult education programs. However, one reason for the high drop-out rate from traditional ABE programs may be that the classes are not designed to accommodate the learning disabled. It seems that ABE administrators are also becoming more aware of the problems of the learning disabled adult, but until specific ABE programs are developed, JTPA and JOBS programs should adopt some of the inexpensive quick screens to identify adults who may possibly be learning disabled and refer them to programs designed for that population (e.g., in-depth assessment and/or training programs for the learning disabled are offered through vocational rehabilitation and community college programs).

At the national level:

- DOL officials should consider the establishment of an interagency workgroup on learning disabilities. The group could include representatives from JTPA, vocational rehabilitation, adult education, JOBS, and vocational education. The purpose of the workgroup would be to improve the quality of services to the adult learning-disabled population. A coordinated federal agency effort at sharing knowledge and experiences could encourage the development of integrated policy guidelines for the various programs, joint research, and technical assistance.

- DOL should review the need for the a Departmental research and technical assistance agenda to examine the learning disabled population and current practices for serving them, including:

  a. Research on the size and characteristics of the learning disabled population.

  b. Studies to examine different employment-related problems and service needs for subgroups within the learning disabled population (e.g., older adults versus teenagers and young adults).

c. Review of various assessment tools and development of a technical assistance package for use by program operators.

d. Research on the current practices and extent of services for learning disabled adults by JTPA, JOBS, vocational rehabilitation, community colleges and other entities. Once more knowledge has been accumalated, it would be useful to conduct studies to (a) identify and document exemplary service models and (b) establish pilot or demonstration projects.

I. INTRODUCTION

The employment problems of individuals who are functionally illiterate--or basic skills deficient--has recently become a policy concern in the Administration and in Congress. The establishment of workplace literacy grants and increased funding for adult basic education in the Department of Education, the explicit inclusion of literacy training in the Job Opportunities and Basic Skills (JOBS) Program, recent vocational education amendments, and proposed amendments to the Job Training Partnership Act (JTPA) Program introduced in 1990 all attest to the concerns about inadequate basic skills in the working age population. Congressional debate and Department of Labor (DOL) changes to the JTPA system continue to place greater emphasis on basic skills assessment and remediation.

A related concern of JTPA and other employment and training programs is that a substantial number of functionally illiterate or basic skills deficient individuals may, in fact, be learning disabled. In general:

> "The term learning disability has been used to describe a variety of problems in acquiring, storing, and/or retrieving information. The learning disabled person has difficulty taking information in through his/her senses and processing that information accurately to the brain."[1]

Many learning disabled persons are of average or above average intelligence, but their disability may lead to behavioral, emotional, academic, or employment difficulties. Although an individual's learning disabilities cannot be eliminated or cured, they can be overcome to allow the person to live productively.

If a substantial proportion of the persons in JTPA or other training and education programs who have been identified as functionally illiterate are, in fact, learning

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1/ Nancie Payne, "The Basics: Understanding Learning Disabilities, Definitions, Symptoms and Manifestations". Olympia, Washington: Payne Associates, Undated.

disabled, it may be necessary to reconsider programmatic approaches to assessment and training.

Thus, the Department of Labor is interested in estimates of the proportion of persons in the functionally illiterate population who are, in fact, learning disabled as well as estimates of those persons eligible for employment and training programs who are likely to be learning disabled. The Department is also interested in the extent of knowledge and expertise with respect to diagnosing (i.e., testing and assessing) learning disabilities and providing basic and occupational skills instruction to the learning disabled.

This report addresses the following questions:

1. To what extent is the working age population identified as "functionally illiterate" in fact, learning disabled? What proportion of individuals eligible for employment and training programs are learning disabled?

2. What is the current state of the art for identifying and serving learning disabled adults, specifically (a) testing and assessing to identify learning disabilities, and (b) providing basic and occupational skills instruction? What are the gaps in knowledge?

3. What short- and long-term policy, research, and programmatic recommendations can be made to ensure that learning disabled persons eligible for employment and training programs are properly served?

Chapter II provides estimates of the functionally illiterate and learning disabled population. Chapter III discusses the methods of testing and assessment to identify learning disabilities in adults, as well as the state of the art with respect to providing basic and occupational skills training to learning disabled adults. Chapter IV presents policy implications and recommendations, based on the above findings, for serving learning disabled persons in employment and training programs.

II. FUNCTIONAL ILLITERACY AND LEARNING DISABILITIES: DEFINITIONS AND POPULATIONS

SUMMARY: There are no sources of information about the number of learning disabled persons eligible for employment and training programs. However, rough estimates can be made based on what is known about the functionally-illiterate population, the learning disabled population, and employment and training program participants.

Depending on the definition used, between 4 and 19 percent of the total adult population is functionally illiterate. The corresponding estimate for Black, Hispanic and economically disadvantaged adults is higher; between 20 to 29 percent of that population is estimated to be functionally illiterate. About 5 to 10 percent of the general population is learning disabled, with the vast majority of disabilities being related to reading. There is also evidence that economically disadvantaged persons have a higher incidence of learning disabilities because of their susceptibility to some influencing factors such as pre-natal malnutrition, maternal substance abuse, low birth weight and premature birth. Some estimates suggest that as many as 50 to 80 percent of illiterate or "poor reading" adults in adult basic education and literacy programs (many of whom are also economically disadvantaged) may be learning disabled.

Combining this information with what is known about the reading level of clients in various programs, it is possible that 15 to 23 percent of JTPA Title II participants (i.e., 50 to 80 percent of those with reading levels below the seventh grade level at program entry) may be learning disabled, and 25 to 40 percent of all AFDC adults and JOBS participants may be learning disabled.

A. Introduction

The purpose of this chapter is to provide estimates of the extent to which adults eligible for JTPA and other education and employment and training programs normally identified as "functionally illiterate" are, in fact, learning disabled. Since there is very little existing data directly related to this issue, it is necessary to:

- o estimate the size, or proportion, of the adult working age population identified as "functionally illiterate".
- o estimate the incidence of learning disabilities among the adult working age population, and

- o extrapolate from the above to estimate of the proportion of individuals eligible for participation in employment and training programs likely to be learning disabled.

Figure II.1 illustrates the populations examined for this paper. The shaded portion -- the area of interest for the Department of Labor and other training and education entities -- represents the extent to which those functionally illiterate persons eligible to participate in employment and training programs may actually be learning disabled.

The concepts of functional illiteracy (also referred to as basic skills deficiency) and learning disability are the subject of considerable controversy in the research literature, and the estimates of the population affected by each problem span a broad range due largely to the fact that the meaning and usage of each term is continually evolving. The term functional illiteracy contains an element which changes over time -- technological advances and other societal changes increase the daily requirements for adult living. Learning disabilities have only recently been the subject of intense research; thus definitions and estimates of the incidences are continuously evolving.

The next two sections discuss functional illiteracy and learning disabilities in terms of (a) definitional variations and (b) population estimates. The final section in the chapter uses this information to make inferences about the proportion of the population eligible for employment and training programs that may be learning disabled.

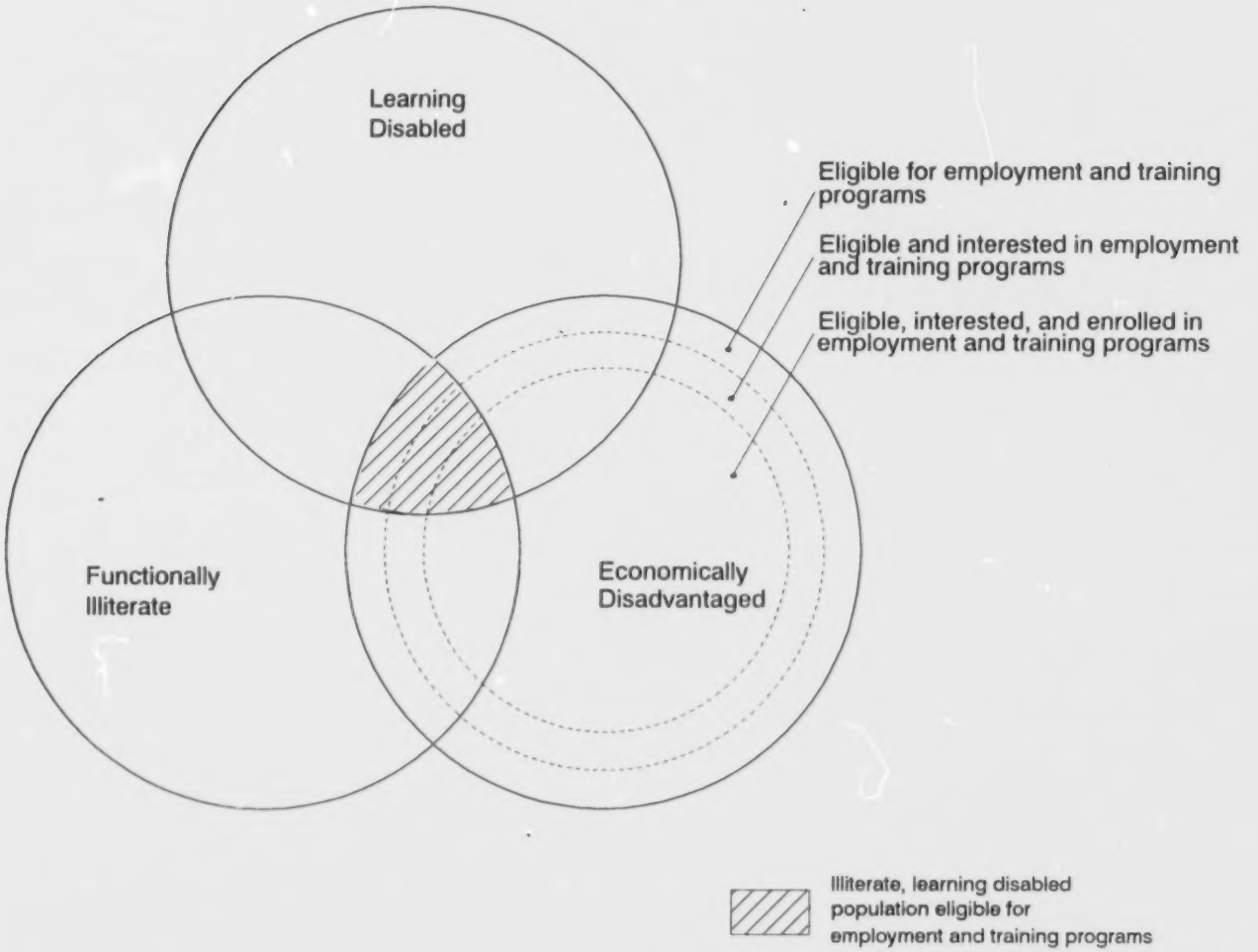
B. Functional Illiteracy

1. Definitional Issues

There is no clear consensus on the definition of functional illiteracy, nor on the distinction between literacy and functional literacy.

Figure II.1

SCHEMATIC REPRESENTATION OF POPULATION OVERLAP


Learning Disabled
Functionally Illiterate
Economically Disadvantaged
Eligible for employment and training programs
Eligible and interested in employment and training programs
Eligible, interested, and enrolled in employment and training programs
Illiterate, learning disabled population eligible for employment and training programs

The need to develop standard definitions is well-recognized. For example, the Educational Testing Service, which will conduct The National Adult Literacy Survey in 1992 under contract from the National Center for Education Statistics, has convened a "Literacy Definition Committee" whose responsibility is to "define literacy and to build on the evolving knowledge about the nature of literacy in our society."[1]

The term functional literacy is often (and increasingly) used interchangeably with the term literacy, even though they have traditionally had rather distinct meanings. Literacy refers to the ability to read at a simple level, while functional literacy refers to the ability to read, write, and compute with the functional competence needed to meet the requirements for adult living. Examples of these requirements for adult living range from the ability to read classified ads in a newspaper to the ability to determine the amount of interest charged on a bank loan.

In fact, over time "literacy" has increasingly been defined in "functional" terms. For instance, although no information is yet available from the Literacy Definition Committee, the committee is likely to define literacy in a functional context. Congressional legislation proposed in the House and Senate also would require development of definitions of literacy, and both bills define literacy in terms of skills needed to function in society or the economy.[2]

The distinctions, though, are complicated by the fact that literacy has generally been defined by rather standardized educational measures of competency (e.g., reading or educational attainment), while functional literacy, particularly recently, is based on the

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1/ Educational Testing Service, "National Adult Literacy Survey" brochure, Princeton, New Jersey, 1990.

2/ U.S. Senate Bill S.1310, "National Literacy Act of 1989," and Proposed House Bill H.R. 5115, Literacy for All Americans Act of 1990."

integration of multiple competencies (e.g., using printed material that requires both reading and math skills) that correlate with minimally-acceptable levels of functioning.

To date, at least four different basic concepts of literacy have been used to define the term and estimate the population:

- Ability to Read and Write
- Level of Educational Attainment
- Grade Level Equivalent of Reading or Math Skills
- Level of English Language Comprehension.

Literacy, then, has generally been based on factors that can be tested or measured. Over the years, two developments in literacy are important to consider. First, the level of competency that is equated with literacy has increased. In the 1960s, a person reading at the fourth or fifth grade level was considered literate. Since the mid-1970s, a sixth to eighth grade level has more commonly been used.[3] Most recently, the Department of Education and the Department of Health and Human Services have agreed that basic skills competency or literacy for the Job Opportunities and Basic Skills (JOBS) program is defined as the ability to read at the 8.9 grade level (i.e., the level of the average student in the third quarter of eighth grade).[4] One proposed literacy bill in the House of Representatives in 1990 also defined functional literacy as "at least eighth grade level functioning in reading, writing, comprehension, and computation."[5]

3/ George E. Marsh II and Barrie Jo Price, Methods for Teaching the Mildly Handicapped. Chapter 11, St. Louis, Missouri: The C.V. Mosby Co., 1980.

4/ U.S. Department of Health and Human Services, Family Support Administration, Federal Regulations for the Job Opportunities and Basic Skills (JOBS) Program, 1990.

5/ H.R. 5115

Unlike literacy, which has been primarily defined in terms of educational measures, functional literacy is defined along at least two different dimensions, each incorporating competency on multiple skills:

- Requirements for Adult Living (e.g., communication, computation, problem-solving, consumer economics)
- Ability to Use Printed Material (e.g., prose, document utilization, and quantitative computation)

The first dimension of functional literacy came from research associated with the Adult Performance Level (APL) projects in the early 1970s, which produced the earliest efforts to measure the skills required for daily economic and social life.[6] Currently, the research being conducted under the National Assessment of Educational Progress (NAEP) is generally recognized as producing the most comprehensive measures of functional literacy, based on the "ability to use printed material."[7] Both the APL and NAEP suggest that functional literacy requires a higher level of competency and skills than literacy. But neither provide ways to translate the competency levels to educational or grade level achievement, presumably because educators feel that such comparisons are inappropriate given the multiple skills being measured.

Thus, although literacy and functional literacy refer to rather distinct concepts, the terms and their measures are increasingly used interchangeably.

2. Estimates of the Functionally-Illiterate Population

Given the many different ways that literacy and functional literacy have been defined, it is not surprising that there are various estimates of the illiterate, or

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6/ Donald Fischer, Functional Literacy and the Schools, Washington, DC: U.S. Government Printing Office, 1978.

7/ Irwin S. Kirsch and Ann Jungeblut, Literacy: Profiles of America's Young Adults, Princeton, New Jersey: Educational Testing Service, 1986.

functionally illiterate population. Table II.1 summarizes the definitions and estimates from several major studies. While there may be others, the studies presented here are those most often referred to in the literature and in discussions with literacy experts. The studies are briefly described in Appendix A.

The general problem related to estimating the illiterate or functionally illiterate population is that the simplest measures which facilitate generalization to the entire population (e.g., level of educational attainment) are widely recognized as poor indicators of both literacy and functional literacy, while the more sophisticated measures of functional literacy (e.g., NAEP's prose, document, and quantitative literacy) have not yet been applied to a representative sample of the U.S. adult population.

As indicated in Table II.1, the estimates range from .3% (NAEP's functional illiteracy as it relates to processing information from documents) and .6% (illiteracy as it relates to the self-reported ability to read and write) to 19% (functional illiteracy as it relates to APL's requirements for adult living) and 24.4% (illiteracy as it relates to level of educational attainment). Excluding these high and low extremes, though, the estimates of the functionally illiterate adult population ranges from 4 percent to 19 percent.

There is evidence, as noted in Table II.1, that the rate of illiteracy is higher for minorities and for economically disadvantaged persons, although it is recognized that some of the estimates may be overstated because of possible cultural biases in traditional testing methods. The 1980 study by NORC using the Armed Forces Qualifying Test (AFQT), for example, found that 7 percent of all youth between the ages of 18 and 23 would not qualify for military service because of their low test scores. But 26 percent of Blacks and 20 percent of Hispanics would not qualify, compared to only 3 percent of whites. Similarly, NAEP found that just over 80 percent of 18-23 year olds can read at

TABLE II.1
ESTIMATES OF LITERACY AND
FUNCTIONAL LITERACY

DEFINITION	STUDY/SOURCE	ESTIMATES	COMMENTS
1. Ability to Read and Write			
	(U.S. Department of Commerce, 1979) CPS Sample of persons 14 years and older	.6% of all are unable to read and write; .44% of whites and 1.6% of Blacks	Incidence is based on self-report
2. Level of Educational Attainment			
	(U.S. Department of Commmerce, 1989) CPS sample of 25 years old and older	24% of all completed less than four years of high school; 23% of whites, 37% of Blacks and 49% of Hispanics	
3. Grade Level Equivalent of Reading Skills			
	(Office of Assistant Secretary of Defense, 1982) Profile of American Youth, ages 18-23 using Armed Forces Qualifying Test	7% of all 1980 young adults would not qualify for military service; 8% of males, 7% of females, 26% of Blacks, 20% of Hispanics and 3% of whites.	Median grade level for reading: 9.6; for Blacks: 6.8; for Hispanics: 7.5
	(Goodison, 1982), nationally representative sample of WIN registrants	50% reading below the 8-9th grade level	WIN mandatory population: AFDC recipients with youngest child under 6 years old
	(U.S. Department of Labor, 1990)	29% of Title IIA terminees reading below the 7th grade level	

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4. Level of English Language Comprehension			
	(U.S. Department of Education, 1982) Survey of 3400 adults using the Measure of English Language Proficiency Test (26 written questions)	13% of adults are illiterate	Illiterate adults are more likely to live in major cities, and most were age 50 or under
			70% of the native English speakers classified as illiterate did not finish high school
			37% f the illiterate adults speak a non-English language at home
5. Requirements for Adult Living			
	(Harris, 1970) Survey of 1985 persons over age 15	13% of persons have marginal functional skills	Skills include writing, speaking, and listening
	(Lyle, 1977) Survey of 7500 persons over age 18	19% of adults function with difficulty	Skills include communication, computation, problem-solving, occupational knowledge, law, community resources govt., and health
6. Ability to Use Printed Materials			
	(Kirsch & Jungeblut, 1985) Survey of 3600 21-25 year olds	Prose illiterate: 4% of all, 2% of whites, 14% of Blacks, and 6% of Hispanics	Percentages are those meeting minimum NAEP competency levels
		Document illiterate: .3% of all,	Prose: understanding

	.1% of whites, 1% of Blacks, and .9% of Hispanics Quantitative illiterate: 8% of all 5% of whites, 25% of Blacks and 13% of Hispanics	and using text info. Document: locate & use info. on forms, tables Quantitative: applying arithemetic methods
(Philadelphia Literacy Survey, 1988) using NAEP, 607 persons aged 18 and older	11.4% classified as lower level illiterate	
U.S. Department of Labor, 1990) Workplace Literacy Survey	N/A	Ongoing study will assess literacy of JTPA, ES and UI populations
National Center for Education Statistics, 1990) Survey of 13,000 persons 13-64 year olds	N/A 1992	Results expected in

the eighth grade level or better, but that 71 percent of Hispanics and only 53 percent of Blacks can read at this minimum level.

The pattern is similar for the economically disadvantaged. Recent DOL statistics from the JTPA-Job Training Quarterly Survey (JTQS) and the JTPA-Job Training Annual Status Report (JASR) indicate that 29 percent of the Title II-A terminees (nearly all are economically disadvantaged and about half are minorities) were reading below the seventh grade level at the time they entered the program.[8] Also, an ETS study of recipients of Aid to Families with Dependent Children (AFDC) in the Work Incentive Program (primarily women whose youngest child is six or older) found that about half were reading below the 8-9 grade level.[9]

Regardless of the reason (e.g., cultural biases in testing or lack of equal educational opportunity), all formal reports show higher rates of illiteracy for minorities and economically disadvantaged persons. Although it is not possible to present an accurate estimate, based on the studies in Table II.1 it is possible that between 20 and 29 percent of Blacks, Hispanics, and economically disadvantaged adults might be functionally illiterate, compared to 4 to 19 percent of the total adult population as stated above.

Thus, a broad range of estimates is available on the rates of literacy and functional literacy, which provide some understanding of the extent of functional illiteracy among persons eligible to participate in employment and training programs.

8/ U.S. Department of Labor, Division of Performance Management and Evaluation, "JTPA Title II.A and III Enrollments and Terminations During Program Year 1988 (July 1988-June 1989)," Washington, D.C., February 1990.

9/ Marlene Goodison, Testing Literacy Levels in the WIN Population, Final Report, Princeton, New Jersey: Educational Testing Service, March 1982.

C. Learning Disabilities

As with estimating the functionally-illiterate population, it is also difficult to estimate the learning-disabled adult population. Before addressing the extent of learning disabilities in employment and training programs, a brief discussion of learning disabilities in general is presented, including estimates of the general population.

1. Definitional Issues

This section provides a brief introduction to learning disabilities (LD), its definition, and some of the difficulties associated with the term and its application. It covers the following four subtopics:

- Problems in defining the term "learning disability"
- Definitions of learning disability
- Adults and LDs
- Types of learning disabilities

Problems in Defining the Term "Learning Disability"

Just as there are difficulties in defining the concept of "functional illiteracy," there are also several complications associated with the definition of the term "learning disability." These problems arise from a variety of factors, including the relative newness of the field itself, the diversity of the disciplines interested in the field, and the difficulty of measuring the degree and even the existence of the disability. Currently, the term "learning disability" has no universally agreed upon definition, a hindrance which has seriously impeded research and dialogue about the condition. It is important to consider the limitations of the existing definitions of LD, as these shortcomings directly affect not only the size and precision of the estimates of the prevalence of LD, but also affect the implications which can be drawn from them. The following, then, are some of the most

serious challenges which LD investigators face in trying to come up with a working definition of LD adequate for the purposes of research, diagnosis, and treatment.

Newness of the Field. The very concept of LD is quite new, dating back only to the early 1960s. The condition has acquired significant media attention and scientific research interest since then, and it is now recognized by medical, psychological, and educational personnel, if perhaps under somewhat different guises. As is the case with any evolving field, the recency of LD awareness has resulted in the continual development and modification of the definitions, manifestations, potential causes, and treatments for the condition as more has been learned over time. The LD field is still very much in flux, which means that the definition of LD is still maturing. This, in turn, suggests that comparisons across time of the LD population are meaningless because the composition of the population classified as LD is likely to have changed as the definition changed.

Diversity of Disciplines Interested in LD. Several specialty professions are interested in the LD field. They include (but are not limited to) medicine, psychology, and education. Because each of these disciplines tends to have its own distinct terminology, research methodology, and aims, it is difficult to develop a single definition which accomplishes the objectives of each discipline in a manner which is relevant to all. As one author notes, "no one definition of learning disabilities can meet the respective requirements of such diverse fields as education, psychology, medicine, and psychiatry."[10] As a result of the disparate needs and interests of these groups, several definitions for LD have evolved, none of which has received widespread acceptance by all fields.

10/ Howard S. Adelman and Linda Taylor. "The Problems of Definition and Differentiation and the Need for a Classification Schema." Journal of Learning Disabilities, Vol. 19, no. 9, 514, November, 1986.

Variability in Defining/Measuring LD Terms. LD is generally defined on the basis of its primary symptom: a substantial discrepancy between the academic achievement and the intellectual ability of an individual of average or superior intelligence, for which there is no apparent underlying physical basis (such as sensory impairment). While this definition makes intuitive sense, it is not easy to implement. Concepts such as "ability," "achievement," and "average" can be measured on any one of a number of tests and scales, and different practitioners tend to use different measurements according to their needs and preferences. This variability among LD researchers leads to controversy over and inconsistency among the definitions and diagnoses of LD.

This problem of inconsistent definition and measurement becomes readily apparent with an example. Since most definitions of LD include (explicitly or implicitly) (1) a measure of ability, (2) a measure of achievement, and (3) a determination of the magnitude of the difference between measures 1 and 2 necessary to constitute a "discrepancy," variations between definitions on any of these three components could potentially result in the diagnosis of very different LD populations. Thus, if, to be considered learning disabled, an individual's level of achievement must be, say, 80% or less of his/her ability (on some hypothetical scale), then a greater number of people would be considered learning disabled than if the cutoff were at 75%. Because there is not consensus concerning the appropriate measures of ability, achievement, and the difference between the two, populations judged to be learning disabled under different definitions are not necessarily comparable.

Inability to Observe LDs. Most LD definitions presume that LDs are disorders of the central nervous system which result in a discrepancy between ability and achievement. The LDs themselves cannot be either observed or directly measured. Instead, LDs are diagnosed through the indirect measurement of their primary symptom: by measuring ability and achievement, looking for a discrepancy between them, and ruling out other

potential causes of the discrepancy. The use of such indirect measures allows for both controversy over the appropriateness of the measure as well as for potential inaccuracy of the measure itself. A corollary to the inability to directly observe LDs is the uncertainty over the causes of LD. Without being able to observe and study LDs directly, it is difficult to determine all the factors which may influence the development of an LD. As Newill et al. note,

> There is no known simple explanation as to why a person has a learning disability....The literature generally supports the notion that no specific etiological agents can be identified in the vast majority of [LD] cases. The high number of cases of "unknown causes" no doubt reflects the current lack of sophistication in the measurement of neurological status and/or genetic transferral.[11]

The following are some of the contributing factors to LD which have been suggested:[12]

- o Genetic Defects
- o Endocrine Gland Dysfunction
- o Pre-Natal Malnutrition
- o Obstetrical Complications
- o Maternal Substance Abuse
- o Chronic Illness
- o Lead Poisoning
- o Brain Damage or Dysfunction
- o Accidents
- o Toxins

The current lack of knowledge about the etiology of LDs is especially unfortunate as it thwarts potential efforts at prevention.

11/ Barry H. Newill, Charles H. Goyette and Thomas W. Fogarty, "Diagnosis and Assessment of the Adult with Specific Learning Disabilities," Journal of Rehabilitation, April/May/June, 1984, p. 36.

12/ Newill, et al, p. 36.

Various Types of Specific Learning Disabilities. The population diagnosed as "learning disabled" is extremely heterogeneous; it is a "group of individuals who differ with reference to symptoms, causes, current performance, and prognosis."[13] This heterogeneity suggests that there are actually several types of LD, rather than one uniform condition. Unfortunately, LD researchers have not agreed upon a standard classification scheme. On the grossest level of distinction, LDs can affect reading, writing, language, and/or mathematical abilities. Several authors in the LD field have proposed means of subdividing LD impairments, but the finer the distinctions between specific types of LD become, the less agreement there is about the category.

Thus, like the definition of LD itself, the classification schemas of LD subtypes suffer from a lack of both operational criteria and universal acceptance. Several typologies for classifying learning disability subtypes have been developed, including one by Dale Brown of the President's Committee on Employment of People with Disabilities and another by the Department of Health and Human Services. The typology developed by Dale Brown is highly detailed and focuses on the ways in which learning disabilities affect the daily activities of the learning disabled person (See Appendix C, Learning Disability Subtypes). The typology developed by the Department of Health and Human Services is found in Section 315 of the International Classification of Diseases (ICD) codes. These codes, used for insurance reimbursement purposes, characterize learning disabilities in broader, more clinical terms. (See Appendix D, ICD-9 Codes for Learning Disabilities). Despite the current inability to precisely identify learning disability subtypes, however, there does seem to be general agreement that the majority of learning disabilities are reading-related. As G. Reid Lyon noted, "although learning disabilities can affect the development of skills

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13/ Howard S. Adelman and Linda Taylor, pp. 514-520.

relevant to listening, speaking, writing, and mathematics, 60% to 80% of the LD population manifest primarily deficits in reading, decoding or comprehension skills."[14]

Various Definitions of Learning Disability

Given the range of expert theories and practices discussed above, it is not surprising that there are various general definitions of "learning disabilities" for policy purposes.

The definition of learning disability employed by the federal government is provided in U.S. Public Law 94-142, the Education for All Handicapped Children Act of 1975. This is the definition used by public school systems to identify children in need of special education services. This definition is as follows:

> "Specific learning disability" means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage."[15]

In 1981, The National Joint Committee for Learning Disabilities (NJCLD), a committee comprised of several professional organizations interested in LDs, began with the federal definition as a starting point in coming up with its own definition. The NJCLD definition is one of the few definitions of LD which does not assume that persons with LD

14/ G. Reid Lyon and Risucci, S. "Classification of Learning Disabilities," in Kenneth A. Kavale, ed., Learning Disabilities: State of the Art and Practice, Boston: College Hill Press, 1988.

15/ Susan A. Vogel, "Special Considerations in the Development of Models with Learning Disabilities.: in Larry B. Silver, ed., The Assessment of Learning Disabilities: Preschool Through Adulthood, p. 114, Boston: Little, Brown, and Company, 1989.

must be of average or superior intelligence; i.e., this definition allows for the occurrence of LD along with "other handicapping conditions."[16]

> Learning disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g., sensory impairment, mental retardation, social and emotional disturbance) or environmental influences (e.g., cultural differences, insufficient/inappropriate instruction, psychogenic factors), it is not the direct result of those conditions or influences.[17]

In 1984 the Association for Children and Adults with Learning Disabilities (ACLD) proposed a definition which placed a greater emphasis on the non-academic effects of LD than had previous definitions, and stressed the fact that LDs are chronic and lifelong conditions. This definition states:

> Specific Learning Disabilities is a chronic condition of presumed neurological origin which selectively interferes with the development, integration, and/or demonstration of verbal and/or nonverbal abilities. Specific Learning Disabilities exist as a distinct handicapping condition in the presence of average to superior intelligence, adequate sensory and motor systems, and adequate learning opportunities. The condition varies in its manifestations and in degree of severity. Throughout life the condition can affect self-esteem, education, vocation, socialization, and/or daily living activities.[18]

16/ Dorothy Montgomery, an instructor of LD children and adults with Educational Service Associates in Wichita Falls, Texas, strongly advocates this position. Based on her experiences in LD remediation, she has found that LDs are a condition entirely distinct from intellectual ability, and are present in individuals of all levels of intelligence. She notes that the co-occurrence of an LD and a low IQ compounds the difficulty of learning. (Personal communication with Dorothy Montgomery.)

17/ Vogel, p. 114.

18/ Vogel, p. 114-115.

The above definitions include little or no reference to the challenges which LDs can pose to an employee on the job. The Vocational Rehabilitation Center (VRC) of Allegheny County, Inc., provided a definition of learning disabilities in 1981 designed to underscore the challenge which a learning disability can present to employment opportunities:

> Individuals with SLD are those individuals who have a disorder in one or more of the central nervous system processes involving perceiving, understanding, and/or using concepts through verbal (spoken or written language) or non-verbal means. This disorder manifests itself with difficulties in one or more of the following areas: attention, reasoning, memory, communicating, reading, writing, spelling, calculation, coordination, social competence, and emotional maturity. These disorders may constitute, in an adult, an employment handicap.[19]

These definitions are intended to describe LDs as they affect both children and adults; they are very general, and tend not to specifically address the concerns faced by the adult with LD, which are considered below.

Adults and Learning Disabilities

Since interest in LD largely grew out of an attempt to explain apparent under-achievement in childhood academic performance, the LD field has historically concentrated primarily on LDs in childhood. As the field has matured, however, and as the first LD children diagnosed have moved into adulthood, there has been a surge of interest in adults with LD. Learning disabilities in adulthood are exhibited in life events more often than in academic situations such as provided in the classroom. Manifestations of LDs in adulthood may include:

> Not being able to make appropriate choices and decisions: (2) not utilizing strategies such as checking things out with people, and monitoring one's own performance; (3) not being able to transfer learning from one activity to the

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19/ Vogel, p. 115.

> next; (4) not being able to break tasks into small parts; and (5) not choosing a successful work context....Unrecognized learning disabilities in young adulthood may interfere with the primary life tasks of adults such as choosing and beginning employment, marriage, and family support.[20]

It is still unclear to what extent childhood LDs are retained in adulthood, although most researchers agree that LDs are not simply outgrown. While it appears that many individuals with LD are able to function adequately by learning to work with or around their LDs, these processes of adaptation are not fully understood. Most authors agree, however, that the adult LD population, by virtue of employment, marital, and familial responsibilities, has a different set of educational, training, and counseling needs from the childhood population, and that instructional and treatment materials designed for children are seldom appropriate for the adult LD population. Fortunately, increasing amounts of research are being conducted specifically on the adult LD population, as noted in the following section and the next chapter.

2. Estimates of the Population: Prevalence of Learning Disabilities

As noted above, a universally-accepted definition of LDs is not available, nor are most existing definitions practical for diagnostic purposes. Furthermore, nearly all of the research that estimates the learning disabled population has thus far focused on children, although it seems appropriate to assume that learning disabilities are permanent and carry over into adulthood. Therefore, it is difficult to obtain estimates of the prevalence of learning disabilities, and any compilation of research results will produce a wide range of estimates. As noted in Table II.2, estimates of the prevalence of LD currently available range from as low as 2 percent to as high as 40 percent of the population. Our best

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20/ John W. Hill, "Unrecognized Learning Disabilities in Adulthood: Implications for Adult Education," Paper presented at the Annual Meeting of the American Association of Mental Deficiency, 1984.

Table II.2

PREVALENCE OF LEARNING DISABILITIES

Source	Year	Sample	Estimates	Definition Used
Rutter, et al.	1964	2,199 children	3.9% (refers to reading problems only)	Reading ability greater than 28 months below predicted level based on age and WISC IQ
Meier	1967	30 2nd grade classes (about 900 children)	11%	Classroom Screening Instrument (measure developed for this study)
Meier	1968	80 2nd grade classes (about 2400 children)	4% to 40% per class (about 15% total)	Same as above
National Institute for Juvenile Justice and Delinquency Prevention	1976	Illiterate prisoners and juvenile delinquents	50% of illiterate prisoners 30% of juvenile delinquents	
Nichols & Chen	1981	29,889 1st and 2nd grade students	8.36%	Performance on compilation of cognitive, perceptual-motor, academic, neurological, and behavioral tests and evaluations
Interagency Committee on Learning Disabilities	1987		5-10%	Informal meta-analysis of available LD research
Shaywitz, et al.	1987	First grade students	11%	Discrepancy between ability and achievement
Shaywitz, et al.	1988	Same sample as 1987 study	12.6%	Discrepancy between ability and achievement
U.S. Department of Education	1976-77 1977-78 1978-79 1979-80 1980-81 1981-82 1982-83 1983-84 1984-85 1985-86 1986-87 1987-88	K-12 public school students served in Special Ed programs	1.80% 2.21% 2.66% 3.06% 3.57% 4.04% 4.39% 4.59% 4.66% 4.71% 4.80% 4.82%	P.L. 94-142 (Note: Dept. of Ed. numbers refer to percentage of students receiving special education services for learning disabilities; they are not estimates of the prevalence of LDs.)

estimate is that the incidence of LD in the general population is in the 5 to 10 percent range. Most estimates cluster around this range and this was the estimate of the Interagency Committee on Learning Disabilities in its 1987 report to Congress. (Appendix B summarizes the studies presented in Table II.2.)[21] The Committee conducted a review of available LD prevalence research and concluded that

> In the absence of good prevalence data, the Committee believes that 5 percent to 10 percent is a reasonable estimate of the percentage of persons affected by learning disabilities. It is clear that prevalence is somewhat higher among socioeconomically disadvantaged populations, and higher in males than in females.[22]

In fact while it is difficult to determine the causes of LDs, several studies have shown that LDs are clearly associated with several socioeconomic, demographic, and genetic factors. One of the most convincing of these studies, due to its extensive examination of various characteristics (over 300 antecedent variables were tested for associations with LDs) and large sample size (close to 30,000 children) is that conducted by Nichols and Chen in 1981. Their findings suggest that learning disabilities are associated with the following:[23]

1. Demographic and maternal variables
    - o Large family size
    - o Frequent changes in residence

21/ Some authors have suggested that the prevalence of LDs are currently being overestimated; (for example, see Kenneth A. Kavale, Learning Disabilities: State of the Art and Practice, p. 2) they suggest that the term is being misused by anxious parents to explain the academic under-achievement of the children because they believe that "learning disability" sounds better than "slow," "dumb," or "unmotivated." Currently, there is little evidence to support this assertion.

22/ Interagency Committee on Learning Disabilities, "Learning Disabilities: A Report to the U.S. Congress," Washington D.C.:Department of Health and Human Services, August 1987.

23/ Paul L. Nichols and Ta-Chuan Chen, Minimal Brain Dysfunction, Hillsdale, NJ: Lawrence Erlbaum Associates, 1981.

- o Low socioeconomic status
- o Retarded younger siblings
- o Receipt of public assistance

2. Pregnancy and delivery variables

   - o Lack of prenatal visits during pregnancy
   - o Hospitalizations during pregnancy

3. Childhood variables

   - o Small head circumference
   - o Low IQ
   - o Right-left identification

In addition, as indicated in Table II.3, LDs vary by sex and race. Males and blacks are more likely to be learning disabled than females and whites. Nichols and Chen point out, however, that once socioeconomic variables are controlled for, blacks are no more likely to be learning disabled than whites; in fact, whites are at slightly higher risk for LD.

Further confirmation of the association between LD and socioeconomic status is suggested by a National Institute for Juvenile Justice and Delinquency Prevention survey which found that 36 percent of all juvenile delinquents, a group disproportionately made up of persons from lower income families, were learning disabled.[24] This and the Nichols and Chen study suggest that racial differences in LD prevalence rates are artifacts of differing socioeconomic circumstances: because blacks are disproportionately represented among the economically disadvantaged, they are also disproportionately represented among the LD population.

Because of the definitional problems associated with the diagnosis of learning disabilities, and the consequent inability to compare prevalence studies which use different definitions, it is impossible to come up with a single estimate of the prevalence of learning

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24/ Dunivant, Noel, "The Relationship between Learning Disabilities and Juvenile Delinquency," Washington, D.C.: National Institute for Juvenile Justice and Delinquency Prevention, US Department of Justice, June 1982.

Table II.3

PREVALENCE OF LDS BY SEX AND RACE

Group	Prevalence
White boys	9.4 %
White girls	4.2 %
Black boys	12.5 %
Black girls	6.0 %

Source: Nichols, Paul L. and Chen, Ta-Chuan. (1981). Minimal Brain Dysfunction. Hillsdale, NJ: Lawrence Erlbaum Associates, p. 235.

disabilities in the general population. However, it is possible to produce a range estimate, and based upon the studies presented above, we believe a reasonable range of the prevalence of LDs to be between 5 and 10 percent of the general population.

D. Estimates of the Learning Disabled Population in Employment and Training Programs

As already noted, there is very limited information about the actual extent of learning disabilities in the adult population eligible for employment, education, or training programs. However, based on the preceding two sections, estimates from a few published sources, and professional judgement by experts, rough estimates can be made of the proportion of persons in various programs who may be learning disabled.

One author suggests that although only about 10 percent of all persons are dyslexic, the rate is at least twice as high among "poor readers" who might enter an adult literacy program; thirty or even 50 percent of those persons might have this most prevalent learning disability.[25] Another author suggests that as many as 80 percent of persons in Adult Basic Education (ABE) programs (generally persons reading below the eighth grade level) may be learning disabled.[26] Another preliminary study estimates that about 70 percent of illiterate adults are learning disabled.[27] This range estimate is consistent with opinions expressed by experts contacted for this paper.

25/ Carolyn Buell Kidder, "Dyslexia and Adult Illiteracy." The Tutoring Network Exchange of Hingham Mass., cited in The Lantern Newsletter of the Landmark School in Prides Crossing, Mass. Spring 1988 issue.

26/ G.Y. Travis, "An Adult Educator Views Learning Disabilities." Adult Literacy and Basic Education, vol. 3, pp. 85-92

27/ Laura Peltz Weisel, based on preliminary research for doctoral dissertation.

Based on these nonempirical estimates, and the information presented in the preceding sections, it is possible that between 50 and 80 percent of all illiterate or "poor reading" adults are learning disabled. This suggests the following:

- 15 to 23 percent of all Title IIA JTPA terminees (50 to 80 percent of the 29 percent who reportedly read below the seventh grade level at program entry) may be learning disabled
- 25 to 40 percent of all AFDC adults (50 to 80 percent of the 50 percent who reportedly read below the eighth grade level) may be learning disabled
- 50 to 80 percent of all adults in ABE remedial programs may be learning disabled.

The following chapter discusses strategies (methods and costs) for identifying learning disabled adults and providing remedial education and vocational training services to them.

III. IDENTIFYING AND SERVING LEARNING DISABLED ADULTS

SUMMARY: There are a number of formal and informal instruments that can be used to assess learning disabilities in adults. Informal screens or checklists, many of which are free, can be used to get a quick sense of whether a person might have a learning disability. To actually assess or diagnose the disability, though, comprehensive procedures (e.g., paper and pencil tests, computerized packages, behavioral observations) are available which must be administered and interpreted by experienced, specially-trained professionals. Although there are many known assessment instruments, there is no directory or guide to techniques specifically for assessing learning disabilities in adults.

Much is known about remediating the basic educational skills of learning disabled persons, particularly reading skills. This knowledge developed first for teaching learning disabled children and has recently been adapted for teaching learning disabled adults. Much less is known about providing occupational skills training to learning disabled adults; vocational education, special education, vocational rehabilitation and JTPA programs have only recently begun to address this issue. The growing body of knowledge (primarily developed by vocational rehabilitation professionals) consists of guidelines that can be used in training classes, and draws from techniques used to teach basic skills to learning disabled persons.

A. Introduction

This chapter briefly discusses the extent to which there are established methods and available information about how to serve learning disabled adults in employment-related training and education programs. The discussion is not meant to provide an exhaustive inventory of strategies. Rather it provides an overview of the areas for which there are available tools, the current gaps in knowledge, and the range of costs associated with various strategies.

The first section discusses assessment and testing, and the second addresses basic skills remediation and occupational training.

B. Identifying Learning Disabled Adults

This section is divided into the following four parts:

- o Why assess for LD?
- o Informal screens for LD
- o Formal tests for LD
- o Guidelines/principles of assessment for LD

1. Why assess for LD?

Setting up systems to diagnose learning disabilities is not a simple task, and it can potentially be costly and time-consuming as well. Consequently, it is important to enumerate the purposes of undertaking assessments.

Although it may appear obvious, it should be noted that not everyone needs to be assessed for LDs. Presumably, one would only test for LDs if an individual demonstrates significant difficulty with basic academic skills. For individuals who have little or no difficulty in reading, writing, and performing mathematical calculations, there is no reason to test for LDs. Only for those who do not perform well on measures of aptitude, such as basic literacy assessments, is it meaningful to determine whether or not these difficulties are due to a learning disability.

For individuals who do have trouble with basic academic tasks, it is crucial to determine whether the problems are LD-related for one of two purposes: to ensure that the individual is served appropriately if he or she will be served by the employment and training program, or to refer the individual to the appropriate agency if he or she will not be served by the employment and training program.

Serving the Individual Appropriately

If the individual is going to be served by an employment and training program, then that agency must know about the individual's special needs in order to respond to them.

By assessing the individual for LDs, the agency can: first, determine that the individual has special needs which should be addressed, and second, better understand those needs and how to meet them. Accurate assessment is of extreme importance in the remediation of learning disabilities. Failure to assess for LDs will often result in inappropriate instruction for the individual with LD. For example, by not taking an individual's learning disability into account and placing that individual in the regular training program, the individual will be exposed to the same learning strategies which have already proven unsuccessful throughout the individual's prior academic efforts; a program which most likely will continue to be ineffective. Assessing for LDs allows the individual's particular learning needs to be identified, so that instruction can be tailored specifically to those needs.

Referring the Individual to an Appropriate Agency

If the employment and training program which the individual approaches for assistance is not equipped to remediate LDs, or is only partially equipped to do so, then it is important for the agency to recognize this when considering the appropriate service strategy. By assessing the individual for LDs, the agency will be able to recognize that the individual might need to be referred elsewhere for appropriate services, and if so, determine on the basis of the assessment the appropriate agency to which to refer the individual. In cases where the agency is only partially equipped to remediate the LD, a joint service delivery strategy (e.g., JTPA and vocational rehabilitation). The ultimate decision must be made by each individual agency, based upon the resources which it has available, and whether or not these resources are adequate to supply the specific training required by LD individuals. One consideration when undertaking the assessment of LD in an individual is to what use the information will be put if the individual has a learning disability. Jovita Ross-Gordon cautions that individuals should not be indiscriminately tested for LD; rather that individuals should be tested only if a diagnosis of LD will serve a

positive function, such as determining eligibility for resources available to remediate the LD. Ross-Gordon notes that:

> If there is one caveat in the assessment of adults with learning disabilities, it might be that assessment is useful to the extent that it provides a means for helping the adult to live more fully.[28]

Assessment for LD in previously untested adults is most useful as part of an overall process through which the individual is assisted in setting attainable goals for his or her professional and personal development.

2. Informal Screens for LD

There are several simple checklists which are available to screen individuals for potential learning disabilities. (Three such checklists are provided in Appendix E.) Informal LD checklists have several advantages: they are free, they take only a small amount of time to administer (about half an hour each), they are simple to use, and they can be administered by a lay person. However, it is extremely important to note that these checklists are not assessment tools; they are intended only to indicate that LDs might exist, and that further testing should be conducted.

The checklists provide a number of symptoms or behaviors which individuals with LDs often exhibit against which to compare the individual being screened. The comparison between the checklist symptoms and the behavior of the individual can be made inconspicuously by the vocational counselor during an interview with the individual client. (See Table III.1 for a suggested interview approach.) If the comparison between the

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28/ Ross-Gordon, Jovita M., "Adults With Learning Disabilities: An Overview for the Adult Educator," ERIC Clearinghouse on Adult, Career, and Vocational Education, 1989.

Table III.1

LD INTERVIEW APPROACH

Interview Behavior

The following guidelines are suggested for structuring the interview environment.

1. **Become an active listener**. The learning disabled adult is often telling you the diagnosis. Exhibit a keen interest in what is said. Be accepting and let the individual tell his or her own story. It is important to find out what the adult considers to be important. Do not interrupt; however, do not encourage rambling and keep the adult on the track.

2. **Ask questions and elicit information in a warm, non-threatening, non-judgmental way.**

3. **Remain sensitive to "touchy" areas**. Communicate that you realize certain things are hard to discuss.

4. **Remember the information you read in the file**. Remembering means you care.

5. **Respond to the adult's feelings as facts.**

6. **Be truthful and honest.**

7. **Respect confidentiality.**

8. **Keep in mind the purpose of the interview and integrate the information as you go**. You are not looking for isolated information but patterns of how the individual has been functioning.

9. **Refrain from making decisions for the adult.**

10. **Do not cut the adult off because he or she is not following your order of chosen questions.**

11. **Do not make a guarantee you cannot keep**, i.e., "I'm sure that everything will be fine." (Can you be sure of that?)

12. **Refrain from utilizing educational jargon.**

13. **Refrain from asking questions that you could not give an explanation for asking.**

14. **Refrain from playing "junior shrink."** Counseling is not your purpose.

15. **Refrain from appearing shocked by anything.**

16. **Refrain from blaming, condemning, or jumping to conclusions.**

17. **Refrain from appearing authoritative.**

18. **Refrain from becoming impatient.**

19. **Refrain from comparing your personal experiences to what the adult is saying**. His or her problem is unique.

20. **Appear well organized and handle all forms and/or papers inconspicuously.**

Table III.1
(continued)
LD INTERVIEW APPROACH

Sample Questions

Listed below are some suggested questions for use in interviewing an adult who may be learning disabled.

1. **Why don't you explain in your own words some of the ways learning has been difficult for you?**
2. **Do these learning problems affect areas other than academic learning? For instance, how does this problem affect you on your job?**
3. **What are some things you have done to get around some of these problems?**
4. **When teachers gave you difficult tasks in school, how did you handle that situation?**
5. **Do you feel the learning problem interferes in your making stable relationships (i.e., work, intimate, friend)? How?**
6. **Describe your family's response to your learning problems.**
7. **Describe what you think are your strengths.**
8. **Where do you see yourself ten years from now?**
9. **What do you think would help you reach your goals?**
10. **Describe someone who has been a support in your life.**

From: Hoy, Cheri A. and Gregg, K. Noel. "Appraisal and Assessment of Learning Disabilities, Including a Special Bibliography." Academic Assessment and Remediation of Adults with Learning Disabilities: A Resource Series for Adult Basic Education Teachers. Sponsored by the Georgia State Dept. of Education, Atlanta, Adult and Community Education Unit.

checklist symptoms and the individual's behavior indicates that the individual does exhibit a majority of the symptoms, then that suggests that the individual might have a learning disability, and that formal assessments should be used to determine if this is the case. It is not accurate to conclude that if the individual exhibits a majority, or even all, of the symptoms that he or she has a learning disability. Checklists are best used to reduce the size of the population to be formally tested for LDs by eliminating those from the "to-be-tested" pool that manifest few or none of the LD symptoms. Resources can thus be conserved by spending money to test only those most likely to have a learning disability.

3. Formal Tests for LD

Assuming that an informal checklist for LDs has been applied to an individual, there are two paths which can be taken: if the individual demonstrates few or none of the LD symptoms indicated on the checklist, then further assessment is not required, and the individual can begin to receive appropriate training, based on his or her current skill level. However, if the individual does manifest many of the LD symptoms, then further, more comprehensive assessment for LDs is appropriate. In this case, formal assessments of LDs can be administered.

Formal assessments of learning disabilities range from pencil and paper tests which take about an hour, can be administered by non-professionals, and are relatively inexpensive; to comprehensive batteries which can take several days, require trained professionals, and cost upwards of several thousand dollars. Some of the more widely cited tests, their functions, and their costs are listed in Table III.2.

Tests range from as little as under $1 to as high as over $1,000 per person, with the majority of the tests costing between $2 and $7 per person, based on purchasing a complete kit with 25 response sheets.

Table III.2

TESTS USED IN THE ASSESSMENT OF LEARNING DISABILITIES

TEST	MEASURES	TIME REQUIRED	COST
Wechsler Adult Intelligence Scale -- Revised (WAIS-R)	Intellectual ability	75 minutes	$ 175.00 complete set of materials (25 response sheets)
Halstead-Reitan Neuropsychological Test Battery for Adults	Neurological functioning	Varies	$ 1,106.00 complete set of materials
Coopersmith Self-Esteem Inventories (CSEI)	Self-esteem	15 minutes	$ 410.75 complete set of materials (25 response sheets)
Wide-Range Achievement Test -- Revised (WRAT-R)	Academic achievement	30 minutes	$ 55.00 complete set of materials (25 response sheets)
Woodcock-Johnson Psychoeducational Battery (WJPEB)	Cognitive ability and scholastic achievement	Varies	$ 125.00 complete set of materials
Peabody Picture Vocabulary Test -- Revised (PPVT-R)	Verbal ability	N/A	$ 35.75 complete set of materials
Gray Oral Reading Tests -- Revised (GORT-R)	Oral reading	20 - 30 minutes	$ 63.00 complete set of materials (25 response sheets)
ESL/Literacy Scale (ELS)	Reading ability/ literacy	15 - 20 minutes	$ 17.50 complete set of materials (25 response sheets)
Test of Adult Basic Education (TABE)	Academic achievement	60 - 200 minutes	About $ 2.00 per person
Adult Basic Learning Examination (ABLE)	Academic achievement	130 - 175 minutes	About $ 1.50 per person

It should be noted that no one of these tests alone is adequate to assess for learning disabilities. For example, since a learning disability is possible when there is a discrepancy between ability and achievement, both ability and achievement tests must be administered. In addition, if such a discrepancy exists, that individual also would need to be tested for potential physical dysfunction, such as poor vision or hearing, to rule out the possibility that the discrepancy is due to sensory impairment. Such medical assessments would require physician testing.

In order to arrive at a formal diagnosis of LDs, an extremely comprehensive and extensive assessment process is necessary. A recommended approach for LD diagnosis is presented in the next section, "guidelines/principles of assessment for LD."

4. Guidelines/principles of Assessment for LD

A comprehensive assessment for LDs is a very lengthy and costly process. This is primarily due to the fact that LDs can only be assessed indirectly, and many other diagnoses must be ruled out. As Newill, et al. suggest for vocational rehabilitation programs,

> Because of the numerous complexities and varied manifestations of the disability, definitional differences and varied professional opinions regarding specific learning disabilities, it is necessary to obtain as much information from as many sources as possible when assessing the presence, nature and scope of the disorder.[29]

They recommend that the counselor conduct a preliminary assessment in conjunction with formal diagnostic procedures, as detailed in Table III.3. The assessment approach which Newill et al. suggest requires considerable time and involvement from several types of professionals: medical clinicians, psychologists, and vocational counselors, among others.

29/ Barry H. Newill, Charles H. Goyette and Thomas W. Fogerty, "Diagnosis and Treatment of the Adult with Specific Learning Disabilities," Journal of Rehabilitation, April 1984.

Table III.3

SUGGESTED LD ASSESSMENT PROCEDURE (NEWILL, ET AL.)

I. **Preliminary Assessment**

A. **Client History:** examples of areas that should be reviewed within sections are provided.

1. **Family Background and Dynamics**
   - -- History of learning disabilities in family
   - -- Current family composition
   - -- Relationship between parents and client
2. **Medical Information**
   - -- Under care of physician/taking medication
   - -- Unusual illnesses, accidents, surgeries
   - -- Difficulties with alcohol or drugs
3. **Interpersonal Functioning**
   - -- Friendship patterns
   - -- Interactions with opposite sex
   - -- Ease of making friends
4. **Psychological Functioning**
   - -- Treatment for psychological problems
   - -- Feelings of inferiority
   - -- Antisocial behaviors
5. **Educational Background**
   - -- Levels and type of education (special education or regular education)
   - -- Repeated grades
   - -- Attitudes toward school
6. **Vocational History**
   - -- Current employment status
   - -- History of frequent job changes
   - -- Relationship between handicap and vocational success

B. **Behavioral Observations.** A conscious effort to attend to the client will reveal valuable information relative to the client's:

1. **Communication Abilities**
2. **Interpersonal Style**
3. **Levels of Attention**
4. **Cognitive Abilities**
5. **Emotional Maturity**
6. **Problem-Solving Style**

C. **School Records.** The vocational rehabilitation counselor should request:

1. **A complete transcript**
2. **Results of formal testing**
3. **Description of any special education services received**
4. **incidence of behavior problems**

Once this information is obtained, the counselor should look for the following patterns.

1. **Lower performance on achievement tests than expected from IQ scores**
2. **History of specific learning problems dating from the primary grades**
3. **Placement in special education classes (any information available)**
4. **Behavioral notes indicating peer interaction problems (either aggressiveness or passivity)**

Table III.3
(continued)
SUGGESTED LD ASSESSMENT PROCEDURE
(NEWILL, ET AL.)

II. **Formal Diagnostic Procedures**

A. **Medical Assessment.** The medical assessment is viewed as an essential component of the diagnostic package as it serves to both: 1) identify any physical condition that may be contributing to, or causing, the learning problem, and 2) identify any physical problem that may exist concurrently with the learning disability. The medical assessment should include the following two components:

1. **Medical History**
2. **Comprehensive Medical Examination**

B. **Psychological/Educational Examination.** At minimum, the psychologist should administer the following tests to make an appropriate diagnosis:

1. **Individual intelligence test** (WAIS-R is recommended). The test should provide the following information:
   - -- Full scale IQ
   - -- Verbal and performance IQ's
   - -- Subscale scores for each verbal and performance measure
   - -- Interpretation of test profile
2. **Individual achievement tests**
   - -- Word recognition (decoding)
   - -- Reading comprehension
   - -- Mathematics
   - -- Spelling

   The test should provide the following information:
   - -- Grade level for each achievement area
   - -- Standard score for each achievement area (when available)
   - -- Discussion of discrepancy (if any) between achievement results and aptitude
3. **Measure of personality functioning.** The test should provide the following information:
   - -- Presence/absence of emotional dysfunction
   - -- Significance of emotional problems (psychotic/neurotic)
   - -- Relationship between emotional problems and SLD

C. **Vocational Assessment.** The vocational assessment should consist of four components:

1. **Informal ascertainment of client's vocational goals**
2. **Preliminary determination of client's vocational aptitudes and strengths**
3. **Formal vocational aptitude and vocational interest testing**
4. **Diagnostic vocational evaluation** (assessments which provide client with "hands-on" experiences in a variety of job simulations

From: Barry H. Newill, Charles H. Goyette, and Thomas W. Fogarty. (April/May/June, 1984) "Diagnosis and Assessment of the Adult with Specific Learning Disabilities." Journal of Rehabilitation.

The battery of tests and interviews which they recommend is not only time-consuming, but extremely expensive as well. In addition, the interpretation of such a voluminous collection of data requires extensive experience with, and substantial knowledge of, LDs.

Without doubt, such a comprehensive evaluation is not appropriate for all employment and training programs. Implementing such a system would involve a substantial commitment, in terms of time, program orientation, and human and financial resources. Rather than attempt to initiate such an approach, it may be more feasible to either contract out for LD assessment services, or consult with an experienced LD clinician in designing a more realistic assessment program.

C. Instructional and Training Strategies for Learning Disabled Adults

Once identified, persons with learning disabilities may need basic skills remediation and\or vocational training. This section describes the state of the art with respect to providing basic skills remediation and occupational skills training to learning disabled adults. There are specific methods for basic skills remediation, especially for the remediation of reading, but no specific methods exist for providing occupational skills training to learning disabled persons. There are, however, instructional guidelines that have been developed for teaching learning disabled students, including helping them to learn and apply certain compensatory strategies to cope with their disabilities in school or training and in the workplace.[30] These topics are discussed in the following sections. Appendix F provides names and addresses of selected organizations to contact for further information about providing instruction to learning disabled persons.

30/ In fact, some learning disabilities experts suggest that the focus of intervention for the more severely learning disabled students should be on the development of problem solving strategies rather than the development of specific skills. From D.D. Deschler, J.B. Schumaker, B.K. Lenz, and E. Ellis, "Academic and Cognitive Interventions for LD Adolescents: Part II," Journal of Learning Disabilities, 17, 170 - 179, 1983.

Informal discussions were held with several JTPA administrators and service deliverers to determine how JTPA handles persons with learning disabilities. These discussions suggest that JTPA programs do not routinely assess for learning disabilities, although administrators recognized that many of their participants may be learning disabled. Learning disabled JTPA participants are normally served through regular training programs. It is possible that further discussions with local officials might reveal some special services, but there is no a priori reason to suggest that separate programs are necessary. The experiences relayed by JTPA administrators are presented in this section where appropriate.

1. Basic Skills Remediation

The basic skills deficiencies (e.g., reading, math and writing) of learning disabled persons can be addressed in several ways. Like non-learning disabled persons, if the disability is mild, the basic skills can be directly taught, using standard classroom approaches. However, if the disability is severe, the instructional approaches should be modified. Without incorporating special instructional techniques, there is a high likelihood that learning disabled persons will become frustrated, fail or drop out of traditional classroom programs. Special approaches include (a) understanding a student's learning style, (b) combining basic skills instruction with functional applications, and (3) modifying teaching methods to accommodate the specific disability.

Learning Styles and Multi-sensory Teaching Techniques

Basic skills remediation for learning disabled persons generally involves evaluating of the student's strengths and weaknesses (learning style) and then using certain techniques (instructional approaches) appropriate for that learning style.[31]

31/ Mary Beth Bingham, "Learning Differently: Meeting the Needs of Adults with Learning Disabilities," Knoxville: Center for Literacy Studies, University of Tennessee.
(Footnote 31 Continued on Next Page)

The importance of learning style and instructional approach in teaching basic skills to learning disabled adults is emphasized in the literature and in discussions with experts. Bingham recommends that tutors be cognizant of learning style in order to design an appropriate teaching method for learning disabled students, and the Learning Disabilities Association of America recommends that instructors gear teaching methods to the learning style of the individual student.[32] A discussion with Dr. Carol Dowdy, a Learning Disabilities Specialist at the University of Alabama at Birmingham, revealed that, in addition to the application of individual strategies toward mastering a given subject, providing basic skills instruction to learning disabled students involves the use of novel teaching practices geared to the learning style of the individual student.

The characterization of learning style is generally based on a professional counselor's assessment of how an individual uses the various senses when learning. This is commonly referred to as the Visual Auditory Kinesthetic and Tactile (VAKT) characterization:[33]

- Visual. The visual learner is comfortable with books and graphs.
- Auditory. The auditory learner tends to be a talker, memorizes easily, performs poorly on group tests, and tends to have a poor perception of time and space.
- Kinesthetic. The kinesthetic learner learns best by moving and touching. Number lines for illustrating arithmetical differences, and outlines before writing can often help these learners.
- Tactile. The tactile learner has trouble with one-to-one correspondence, rote computing and sequencing at any level. The student needs concrete objects for learning and has difficulty learning abstract symbols. Diagrams and other illustrations can help establish associations with numbers and symbols.

(Footnote 31 Continued from Previous Page)
November 1989. Some sources, however, do not mention specific instructional approaches, rather they recommend that the instructor apply alternative strategies and techniques to the student's learning style.

32/ Bingham, 1989, and Learning Disabilities Association of America, "Modifying Instruction for Students with Learning Disabilities." January 1990.

33/ Marsh and Price, 1980.

Once the individual's strongest mode of learning has been identified, then certain teaching approaches can be implemented. Most instruction of LD students uses multisensory techniques--commonly called VAKT techniques--adapted to the individual's learning style. For example, the four basic approaches used to teach reading, each of which relies on various sensory combinations, are:[34]

- Phonics Approach. This approach follows the traditional concept of learning the beginning alphabet sound, then letter combinations, digraphs, trigraphs, phonograms, encoding, decoding, sentence structure, spelling rules, learning reading generalizations and writing.

- Sight Word Approach. This approach is the technique of teaching and recognizing whole words. The approach relies heavily on visual memory (an ability with which many learning disabled adults have difficulty).

- Word Pattern Approach. This approach primarily teaches decoding and is based on the fact that English spelling patterns are predominantly regular. This technique relies heavily on the ability to rhyme ending sounds, which is a skill which is not developed well in many learning disabled adults. This approach is usually used as a supplement to another method.

- Language Experience Approach. This approach combines the skills of the other three approaches and puts these skills in a context which is relevant and meaningful to the student.

There are formal, commercially available instructional manuals which can be used to remediate the reading skills of learning disabled persons, and which combine a VAKT or other method (e.g., listening tools) applying one or more of the four basic approaches. The Orton-Gillingham approach, the Adapted Fernald Technique, and the Directed Listening-Language Approach (DL-LEA) are three approaches that have been used to develop various techniques. For instance, the Fernald approach, originally developed in the 1940s, includes

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34/ Manhattan Adult Learning Center, "Project Upgrade on Adult Learning Disabilities: An Update." Washington DC:US Department of Education, Division of Adult Education and Literacy, Clearinghouse on Adult Education and Literacy, Undated. Note that while these approaches are also used to instruct non-learning disabled students, the descriptions for each demonstrate their use in instructing the learning disabled student.

having students trace words until he or she can write the word from memory. The tracing approach has been adapted by different educators and packaged with teacher manuals.[35]

Although most formal methods focus on reading, similar multisensory techniques have been adapted for teaching mathematics (usually informally developed by individual instructors). For example, mathematics instruction begins with the manipulation of concrete objects to focus on comprehending the problem to be solved before moving on to work with mathematical symbols.[36] Another adaptation for teaching mathematics involves having the student trace numerals in drill fashion until he or she is able to "feel" the correct version of the numeral.[37] The issue of learning style can also be addressed through computer-assisted instruction. For example, several organizations have developed computer software which allows students to control the method of input (e.g., touch, voice), type of output (e.g., graphics text, audio), and pace of instruction.[38]

Combined Instruction of Basic and Functional Skills

Thus, there is evidence that the learning disabled can be taught basic skills directly, by using VAKT or other methods to learn math and reading. However, some research conducted for the vocational rehabilitation system in the late 1980s also recommends that basic skills be taught to learning disabled persons in "functional" settings, since the disability often makes it difficult for the person to apply basic skills in daily situations.[39]

35/ Linda J. Love, "Learning Together: A Handbook for Teaching Adults with Learning Disabilities" Malaspina College, Nanaimo, British Columbia, Canada, 1985.

36/ Discussion with Dr. Carol Dowdy.

37/ Love, 1985

38/ National Support Center for Persons with Disabilities, Resource Guide for Persons With Disabilities. Atlanta, Georgia. September 1990.

39/ F. James Hoffmann, et al, "Needs of Learning Disabled Adults," Journal of Learning Disabilities, Vol. 20, No. 1, January 1987; and Ernest F. Steidle, et al, "Research
(Footnote 39 Continued on Next Page)

For example, basic reading, writing and math instruction could include practice in filling out forms, learning how to not only read but follow written directions, interpret transportation schedules, and comprehend bank statements.

As noted in a later section, this functional approach to basic skills instruction may be particularly relevant for learning disabled persons who also have employment difficulties. It also suggests techniques that could be incorporated into pre-employment or job search training components.

Accommodating Teaching Techniques

One of the themes that permeates the literature on learning disabilities is that instructors working with learning disabled persons should develop and incorporate into their instruction, alternative strategies and techniques that help students with learning disabilities respond to (or overcome) their own weaknesses and problems.[40] Such strategies or guidelines appear in many articles, reports, books, brochures, and manuals available from a number of sources, several of which are noted in Appendix F. Examples of some of the more common instructional guidelines include:

- Break down projects, procedures, concepts into their smallest components
- Provide many opportunities for repetition, review and over-learning
- Allow extra time for testing
- Make sure the student has acquired one skill before presenting the next skill in the sequence of learning tasks.

(Footnote 39 Continued from Previous Page)
Report 11. Summary and Implications: The Vocational Rehabilitation Needs of Adults With Learning Disabilities," Research and Demonstration Project for Improving Vocational Rehabilitation of Learning Disabled Adults. Woodrow Wilson Rehabilitation Center, Fishersville, Virginia, May 1986.

40/ Love, 1985.

Such accommodations are available at most community colleges and many vocational schools that have universal entry policies. Some of the more common services for LD students include tape recorders, tutoring on how to take tests, reader services, and note-takers.

These teaching guidelines are relevant not only for basic skills instruction, but, as discussed below, for occupational training as well. In addition, students themselves can learn these techniques and adopt them as part of their own compensatory strategies for learning and for performing on the job.

2. Occupational Skills Training

There is very little published information about how to provide occupational skills training to learning disabled persons. This lack may partly reflect the newness of the entire field of learning disabilities as well as the focus to date on serving learning disabled children rather than adults. Some knowledge is developing, though, related both to the needs of LD adults and the types of training required to serve them.

Vocational Needs of LD Adults

Service needs will vary among learning disabled persons in employment and training programs. For example, youth participants who have been previously diagnosed as learning disabled may have received basic skills remediation, and may only be in need of vocational skills training. Undiagnosed learning disabled youth may need both basic skills remediation and occupational skills training. Older workers with previous workforce experience may need remedial basic skills training or workplace-based remedial training.

Recently, there is some evidence that educators and vocational experts are beginning to address the general work-related needs of learning disabled adults. Much of the attention and research has been in the area of vocational rehabilitation, presumably because since 1981 learning disability is a federally-authorized condition that qualifies one for vocational

rehabilitation services. Although the vocational rehabilitation population may be somewhat different than the economically disadvantaged population served by JTPA (e.g., vocational rehabilitation program eligibility is not income-based and clients may have other handicaps as well as learning disabilities), the experiences are useful to consider.

One major vocational rehabilitation effort is particularly important: the Research and Demonstration Project on Improving Vocational Rehabilitation of Learning Disabled Adults at the Woodrow Wilson Rehabilitation Center in Fishersville, Virginia. Begun in the early 1980s, a main objective of the Wilson R&D project was to examine the needs of the learning disabled population in vocational rehabilitation programs. This project produced over a dozen reports, many based on surveys administered to adults with LD, vocational rehabilitation service providers and LD advocates. The surveys found that the major employment-related problems identified by the LD adults themselves were (1) difficulty filling out job applications, and (2) not knowing where to go to find a job or how to get job training. The service providers agreed that these are serious problems, but they ranked as the most serious problem the LD adult's difficulty following directions and also reported a lack of job interviewing skills.[41]

A separate 1982 survey by the Association for Children and Adults with Learning Disabilities also found that LD adults reported a great need for career counselling as well as help with reading and math.[42]

These employment-related needs are particularly severe for LD adults because these persons often also have other difficulties resulting from the LD that are important to success in the workplace, including lack of interpersonal skills, low self-esteem and inability to

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41/ The results of the surveys are summarized in Hoffman, et al. "Needs of Learning Disabled Adults," Journal of Learning Disabilities, Vol. 20, Number 1, January 1987.

42/ Association for Children and Adults with Learning Disabilities, Newsbriefs, 1982, reported preliminary survey results, as cited in Hoffman, et al. 1987.

maintain a schedule.[43] Thus, in addition to specific occupational training, it may be necessary to emphasize the pre-employment, world-of work and job search training components of employment and training programs.

Guidelines for Training LD Adults

There is no evidence that different areas of occupational training should be provided to LD adults versus non-LD adults; LD adults can be appropriate candidates for a wide range of occupations. But there is considerable evidence that training programs that include LD students should (1) incorporate instructional strategies similar to those described earlier for remedial basic education, and (2) focus on helping the student to strengthen his/her own compensatory strategies. These principles should, ideally, guide each step of the vocational training plan for an LD adult.

Assessment of Ability and Interests. Learning disabled persons should choose occupations which utilize their strong points and avoid deficit areas; e.g., persons with perceptual motor problems would have difficulty working as a mechanic or bricklayer, and persons with a tendency to transpose digits should not be trained as data entry operators.

Formal methods to help persons clarify job-related abilities and interests are especially appropriate for learning disabled persons. These include the Myers-Briggs Type Indicator, and the Harrington-O'Shea Career Decision-Making System.[44]

Alternative Instructional Techniques. Discussions with a few SDA administrators suggest that, while our estimates indicate that roughly one-fifth of JTPA participants may be learning disabled, as mentioned earlier it is not routine for JTPA to identify and provide

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43/ C. Shiro Geist and C. McGrath, "Psychosocial Aspects of the Adult Learning Disabled Person in the World of Work: A Vocational Rehabilitation Perspective," Rehabilitation Literature, July-August 1983.

44/ Ross-Gordon, Jovita M., 1989.

special services for persons with learning disabilities (although it is possible that discussions with a larger number of SDAs might prove otherwise). In general, if JTPA staff "know" a person has a severe learning disability, he or she most likely is referred elsewhere (e.g., to a vocational rehabilitation program). In some other cases, it may be possible that some program administrators and/or training providers have actually unconsciously adjusted their programs to better serve LD adults.

An example of such alternative training was evident in the Rockefeller Foundation's Minority Female Single Parent (MFSP) program. In one site in that demonstration, participants were experiencing difficulty in vocational training classes, and the curriculum was redesigned to accommodate the needs of trainees, specifically in the form of less reliance on paper and pencil materials, and more "hands-on" experience. While learning disabilities were not specifically mentioned in the project report, it is possible that some of the program participants were in fact learning disabled, and that the teaching approach was modified to accomodate the trainees. This may have implications for other workplace literacy initiatives, and may suggest approaches appropriate for training persons in need of both basic skills remediation and skills training.

Based on the discussion earlier about instructional guidelines that are routinely used to teach LD students basic education, some vocational and training experts are beginning to develop similar guidelines for use in occupational training programs. For example, vocational skills instruction might rely more on written information if auditory comprehension is deficient or might allow more "hands on" practice to facilitate verbal learning. The pace of the training class may be slowed, learning disabled students may be allowed more time to practice on equipment, teachers aides or volunteers might be used, or students might work in small groups to complete the projects. An example of guidelines for providing work-related training to learning disabled persons appears in Appendix F. (These guidelines were included in a paper by Nancie Payne.)

Over the past few years, vocational rehabilitation researchers have developed approaches to accommodate LD adults. For example, detailed approaches, known as Compensations, Accommodations, Modifications and Strategies (CAMS) have been developed for use by vocational rehabilitation counselors to maximize success in a given environment, and which can be used to guide a person toward productive employment. These have been developed because "with the LD population, it is the behaviors or characteristics of the individual that have the greatest impact on successful functioning in any new environment, rather than the academic deficits that are typically used to diagnose and describe the population."[45] For each LD characteristic (such as 'individual is easily distracted'), one or more vocational impacts (such as 'difficulty working in a clerical or group setting' and 'problems around machinery, breakroom, high traffic areas in office') are listed, as is an appropriate CAMS approach (such as "highlight significant characteristics of the activity and minimize distractions"). Appendix H provides an example of the 'Characteristics, Vocational Impact, and CAMS'.

Skills for Success On the Job. Ideally, if remedial education and occupational training are successful, learning disabled persons can be productively employed if they are able to compensate for their disability in their daily work situation.[46] This includes selecting a job in which the work environment or assignment allows the individual to draw upon his own strengths. An example of a flexible work environment is one in which the learning disabled individual would be able to use verbal versus written communications (for dyslexic employees), repitition or clarification of instructions (for persons with auditory perceptual

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45/ From University of Alabama 1990 Learning Disability Training Project.

46/ Charles J. Kohaska and Jill Skolnik, "Employment Suggestions for Learning Disabled Adults," Academic Therapy, May 1986.

problems), and color-coded files and a well-organized environment (for persons with visual perceptual problems who may have difficulty finding objects).

Discussions with administrators in selected SDA's and a review of the literature on the needs of learning disabled persons also suggest that learning disabled adults benefit from the use of job counselors and job coaches. The literature also suggests that, for learning disabled students with no prior work experience, mentors can help to smooth the transition from school to work.[47] Conversations with one SDA official revealed that a job coach was assigned to work with learning disabled program participants. The responsibilities of the job coach in this case included making sure the individual was job-ready; i.e., making sure the individual could meet the job schedule, and making sure the employer knew what to expect of the employee. Depending on the nature and severity of the learning disability, the responsibilities of a job coach could include explaining the nature of the learning disability, the needs of the learning disabled employee, the strengths and weaknesses of the potential employee, and special accommodations such as scheduling or identifying work conditions that would allow the learning disabled person to perform productively on the job.

3. Cost Implications

Providing basic skills remediation and occupational training to learning disabled persons appears to be time- and cost-intensive. Most experts state or imply that LD students learn best in small groups or in one-on-one situations. The training of learning disabled persons requires that instruction be targetted to individual strengths and weaknesses and both instructors and students must apply compensatory techniques. The costs of serving learning disabled persons in employment-related education and training programs are potentially high (or are higher than those for the general population).

47/ Eugene Edgar, "Employment as an Outcome for Mildly Handicapped Students: Current Status and Future Directions," Focus on Exceptional Children, September 1988.

There may, however, be cases in which learning disabled persons can be effectively served in a group setting. For example, a discussion with one JTPA basic skills contractor suggested that at the lowest competency levels (first to third grade reading and math ability), the techniques and practices for teaching reading are no different for learning disabled and non-learning disabled students, and that 20% of his program participants were reading at the lower levels. Also, some training for learning disabled adults could be provided in a group setting. Instructional modules on job selection, job retention and advancement, and job search skills for learning disabled students were cited by one author as appropriate in a group setting.[48] Finally, there is no way to estimate what portion of the adult LD population has mild disabilities versus severe disabilities. Presumably those with severe LD will require the most costly interventions.

Cost data for serving learning disabled adults in a vocational rehabilitation setting are available. Data from a 1984 survey of state vocational rehabilitation agencies and annual data reported by states to the national Rehabilitative Services Agency indicate that on average vocational rehabilitation program spent about $1300 per LD case in 1988, although at least 20 percent of the cases were served at a cost of less than $200. The vast majority of persons with LD in vocational rehabilitation programs (over 90 percent) apparently receive only diagnoses and evaluations (either provided directly by the program or purchased from an outside contractor) with no other reported service.[49]

Thus, the costs of providing services appear to potentially span a broad range, from no direct cost (e.g., refer all LD clients to other agencies at no cost to referring agency, use unpaid tutors or volunteers as mentors and coaches) to low cost (e.g., expend $2 to $7 per

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48/ W. Crimando, "A Review of Placement Related Issues for Clients with Learning Disabilities" Journal of Rehabilitation, April/May/June 1984.

49/ James H. Miller, S. Mulkey, and K. Kopp, "Public Rehabilitation Services for Individuals with Specific Learning Disabilities", 1984. See also U.S. Department of Education, Federal Rehabilitative Services Administration. Unpublished Data Tabulations (Table T051, Case Service Costs)", July 1990.

case to conduct quick assessment of LD, modify instructional materials for use in job clubs or pre-employment classes) to high cost (e.g., expend $1000 for intensive assessment of LD, fund special training programs such as supported work experience for LD clients).

IV. IMPLICATIONS

The discussions in the previous chapters indicate that it is only fairly recently that training and education specialists have begun to focus on the special needs of the learning disabled population. There is clear evidence that a large portion of persons in JTPA and other employment and training programs may be learning disabled:

- Depending on the definition used, between four and nineteen percent of the total adult population, and 20 to 29 percent of economically-disadvantaged adults, may be functionally illiterate.
- Some general definitions suggest that persons reading below the fifth or seventh grade level are functionally illiterate. A few studies of the adult basic education population (primarily persons reading below the fifth to seventh grade level) indicate that between 50 and 80 percent are probably learning disabled.
- This suggests, therefore, that:

  15 to 23 percent of all Title IIA JTPA participants (i.e., 50 to 80 percent of those identified as reading below the seventh grade level at program entry) may be learning disabled, and

  25 to 40 percent of all AFDC adults and JOBS participants may be learning disabled.

If one-fifth of all JTPA adults and over half of those with low reading levels are learning disabled, it is appropriate to consider strategies for serving this population. On a positive note, there is considerable knowledge accumulating about (1) how to assess for learning disabilities and (2) how to create positive learning environments for the learning disabled. This knowledge comes primarily from the educational and vocational rehabilitation areas. For example, it is generally felt that learning disabled persons can be taught basic skills and can learn to overcome (but not eliminate) their disabilities. There are also numerous assessment instruments and packages for diagnosing learning disabilities, ranging in cost from less than $10 per person to well over $1000. Finally, there are

general guidelines for teaching the learning disabled, first developed by educators but now being adapted for vocational rehabilitation and employment and training programs.

We offer the following recommendations to improve employment and training services for the learning disabled. The local level recommendations focus on ways that programs can make minor modifications in their practices given that a large proportion of their participants are evidently learning disabled. The national level recommendations focus on filling the existing gaps in knowledge about the learning disabled population, their employment-related needs and appropriate service delivery approaches.

Incorporate appropriate instructional strategies into job search training and pre-employability components.

Since over half of the JTPA adults who are reading below the seventh grade level may be learning disabled, it seems that local programs should consider integrating some of the simpler instructional techniques into their group instruction components, such as relying less on written materials and manuals and using alternative methods such as videos and hands-on application and having smaller groups to allow more individual instruction. Even if a program does not routinely screen for learning disabilities, the incorporation of these simple techniques into group components, at least for those with low reading levels, could improve the benefits for persons with learning difficulties.

Combine basic skills instruction with functional occupational skill instruction.

Since a large portion of the JTPA population with reading problems may be learning disabled, programs should consider having training programs that integrate basic education with applied functional skill development. This approach is feasible in a traditional classroom setting (e.g., including functional applications along with basic reading and math lessons), in a vocational training setting (e.g., teaching basic skills along with vocational

training, adapting reading and math to the occupational training curriculum) or in the workplace setting (e.g., workplace literacy programs). Basic education remediation alone is not likely to help the learning disabled person succeed in the workplace.

Avoid arbitrary referral of persons with low reading skills to possibly inappropriate remediation programs.

Not surprisingly, there are various programmatic approaches to how JTPA serves persons who read below the seventh grade level when they enter the system. Some SDAs contract with community based organizations for remedial programs for these persons; some are adopting computer-based learning packages that may have specific modules for the learning disabled. Most adults in JTPA with low reading levels, though, are referred to the education system for adult basic education.

However, it is probably not wise to simply refer these persons to remedial education programs without first assessing whether a person is learning disabled and identifying community programs that are equipped to serve learning disabled adults. One reason the for the high drop-out and failure rate in adult education programs may be that the classes are not designed to accommodate the learning disabled. It may be a waste of time and resources to simply refer LD adults into a traditional education program. JTPA can adopt some of the quick screens to identify potential learning disabilities and then refer to vocational rehabilitation, community colleges or other agencies for more professional assessments.

At the national level, DOL officials should consider the establishment of an interagency workgroup on learning disabilities.

The group could potentially include representatives from vocational rehabilitation, adult education, JOBS, and vocational education to share information and concerns about

the learning disabled adults in their respective programs. There is undoubtedly much information in some of these other programs that could be reviewed for its relevance to JTPA. A coordinated federal agency effort (e.g., DOL, Department of Human Services, and the Department of Education) at sharing knowledge and experiences would help to develop integrated policy guidelines for the various programs, joint research and technical assistance.

DOL should review the need for a Departmental research and technical assistance agenda to examine the learning disabled population and current practices for serving them.

There are still many gaps in information which, if addressed, will enable DOL to more effectively serve learning disabled persons. Issues for consideration are:

- Research on the size and characteristics of the learning disabled population.

  What proportion of the learning disabled adults who lack functional basic skills have only mild disabilities versus severe disabilities? The nature of the population could dramatically affect how programs serve this group and the cost of the services. There are no good current sources of data on this issue, but DOL and other federal agencies could sponsor research to survey the population or develop special statistical reports from relevant programs.

- Studies to examine different employment-related problems and service needs for subgroups within the learning disabled population.

  Should different types of learning disabled adults be served differently? For example, many young adults (e.g., under age thirty) may have been diagnosed as LD in elementary or secondary school and perhaps may have even received vocational or rehabilitational counselling. These persons, presumably, are quite different in their service needs from older adults who may have employment and academic difficulties and who may never have been assessed for learning disability. Studies of these issues might include indepth literature reviews, field investigations, or conferences with papers or presentations by experts and program operators.

- Review of various assessment tools and program practices and development of a technical assistance package for use by program operators.

  There is a growing amount of information related to learning disabled adults, but there is no centralized source to which program operators can be referred. What is the difference among the various types of assessment tools currently available (e.g., quick screens/checklists, formal tests, intensive assessments)?

What are the benefits of each and their strengths and weaknesses? What is the extent of services (assessment, education, and training) currently available through existing institutions at the community level, particularly through community colleges, four-year colleges, JTPA, adult education programs and vocational schools and vocational rehabilitation programs?

What is the current practice in the field for serving learning disabled persons if they are identified through JTPA? It is assumed that some learning disabled adults are known to the JTPA system, but there is no information about what happens now to these people. How does JTPA link with other agencies and institutions to serve this group?

Once more knowledge has been accumulated, it would be useful to conduct studies to (a) identify and document exemplary service models and (b) establish and study pilot and demonstration pilots in selected communities.

APPENDIX A

STUDIES ESTIMATING LITERACY AND FUNCTIONAL LITERACY

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STUDIES ESTIMATING LITERACY AND FUNCTIONAL LITERACY

Adult Performance Level (APL) Study (1975) The US Office of Education supported the APL project at the University of Texas at Austin. The project objectives were to: 1) specify functional competencies necessary for economic and educational success, and 2) develop a way of assessing those competencies. Although criticized on a number of ground including the choice of competencies to be measured, the APL study was one of the first to examine functional literacy on the basis of a set of requirements for adult living, and to estimate the proportion of the population unable to meet those requirements.

Census (1979) The Current Population Survey (CPS) asked respondents whether or not they could read and write. (.6)% of respondents said they were unable to do so. The survey, however, provided no information about the ability of the respondents to "function" in society, regardless of the definition of "functioning."

Armed Services Vocational Aptitude Test Battery (ASVAB, 1980). The ASVAB assessed the vocational aptitude of a nationally representative sample of 16 to 23 year old youth. Four ASVAB subtests were combined to form the Armed Forces Qualification Test (AFQT), a general measure of trainability and the primary criterion of enlistment eligibilty to the Military Services.

Department of Education Survey (1982) The written portion of the Measure of English Language Proficiency (MAEP) test which consists of 26 questions that test an individual's ability to identify key words and phrases and match those with one of four fixed-choice alternatives was used in this study. The study used a cutoff of 20 correct questions to define literacy. This Department of Education survey was the first to isolate persons who were literate in a language other than English. The study also provides some detail on the relation between educational attainment and literacy.

National Assessment of Educational Progress: Profiles of America's Young Adults (1985) This study used the most comprehensive definition of literacy -- "using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential. The

study measured proficiencies on tasks that stimulate those encountered in various adult settings, such as reading and interpreting prose, as in newspaper articles, magazines and books; identifying and using information located in documents such as forms, tables, charts, and indexes; and applying numerical operations to information contained in printed material such as a menu, a checkbook, or an advertisement.

Census Data (1988). The Current Population Survey (CPS) provides data on the educational attainment of a sample of the population. Levels of education, while not a direct correlation of literacy, are assumed to provide a rough indication of a person's ability to function in society.

Philadelphia Literacy Study (1988). This study investigated the nature and extent of adult literacy and the characteristics of the less literate population in the City of Philadelphia.

APPENDIX B

STUDIES RELATED TO LEARNING DISABILITIES

APPENDIX B

Studies Related to Learning Disability

Rutter, et al. In a 1964 survey, Rutter and colleagues measured the reading ability and the IQ of 2,199 children. They identified a group which they referred to as "specifically retarded in reading," which they defined as children "with a reading accuracy or comprehension which was 28 months or more below the level predicted on the basis of a child's age and short WISC IQ [test of ability]." The "specifically retarded in reading" group scored poorly in reading, but were otherwise of average intelligence as scored on the IQ test. This group, then, were students who were learning disabled in reading. Rutter estimated the size of this population to be 3.9 percent of all the children. It is important to note that Rutter's estimates are for those disabled in reading only; his estimates do not capture students disabled in writing, arithmetic, or any other area, and hence are most likely underestimates.

Meier. Meier conducted two studies of the prevalence of LD among elementary school children in eight states. He used a definition of LD originally proposed by Chalfant and Scheffelin, which reads:

> Children with specific learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written languages. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual, hearing or motor handicaps, to mental retardation, emotional disturbance, or to environmental disadvantage.

Meier used three levels of diagnosis to identify the presence of LDs:

1. Classroom Screening Instrument. A test designed to screen potential LD students for further study, which was developed for the study and which was administered by the teacher of each class.

2. Differential Diagnosis. Students identified as potentially LD were then administered a battery of achievement and IQ tests in level 2.

3. Medical Diagnosis. Level 3 consisted of a complete medical workup, and was intended to identify any physical causes of learning retardation, such as poor vision or hearing.

Study #1. Meier's first study was conducted in 1967 as an exploratory study. Thirty second-grade classes (about 900 children) in Colorado were sampled, and 11 percent were diagnosed as learning disabled. **Study #2.** The second study was conducted in 1968, with the sample consisting of 80 second grade classes (about 2,400 children). Classroom estimates of LD prevalence ranged from 4 percent to 40 percent, with an average of about 15 percent across all 80 classes.

National Institute for Juvenile Justice and Delinquency Prevention. The National Institute for Juvenile Justice and Delinquency Prevention conducted a survey of prison inmates across the U.S. and found that 50 percent of all illiterate prisoners and over 30 percent of all juvenile delinquents were learning disabled. An interesting finding of this study was that over 60 percent of the juvenile delinquents with LD, when placed in LD educational programs, did not again break the law.

Nichols and Chen. Nichols and Chen conducted a study of minimal brain dysfunction (MBD) using almost 30,000 children in the first and second grades. Nichols and Chen defined MBD as including the following three categories: those with hyperkinetic-impulsive behavior (HI), those with neurological "soft signs" (abnormalities of motor coordination) (NS), and those with learning difficulties (LD). Children were classified as LD if their performance on achievement tests was significantly below that predicted by their IQs. Nichols and Chen found that 8.36 percent of their study population had learning difficulties, but only 6.54 percent had learning difficulties exclusively, that is, 1.82 percent of the subject children had LD combined with either HI or NS. Nichols and Chen also found that incidence of LDs is associated with socioeconomic status, family size, and frequent changes in residence, as noted above.

Shaywitz, et al. Shaywitz and colleagues conducted two studies on the same population of children over two years, 1987 and 1988. They used a definition of LD based upon the federal definition of LD as the discrepancy between ability and achievement. At the end of the first year (when the students were in first grade), Shaywitz et al. found an LD prevalence rate of 11 percent, and at the end of the second year of the study (second grade) a prevalence rate of 12.6 percent. The Shaywitz study differentiated between reading and mathematics LD. In the first grade, the prevalence rates for both reading and mathematics LDs were 7.0 percent. In the second grade, reading LD prevalence was 7.3 percent, and mathematics was 7.5 percent.

U.S. Department of Education. The U.S. Department of Education collects data on the number of students in public schools receiving Special Education services for learning disabilities. The Department of Education does not estimate the prevalence of LDs. However, several sources use the Dept. of Education numbers as a starting

point for estimates. According to the Department of Education, in the 1976-77 school year, 1.8% of all public school students were receiving special education services for LDs, but by 1987-88, this percentage had risen to 4.82%. It seems improbable that the actual number of students with LDs has increased by more than two and one-half times in 11 years. More likely, the change in the number of students receiving special educational services for LDs reflects both an increased awareness of learning disabilities and improvement (but not perfection) in school systems designed to respond to the needs of students with LDs.

APPENDIX C

LEARNING DISABILITY SUBTYPES

LEARNING DISABILITY SUBTYPES

Academic Difficulties: Problems with learning basic academic skills.

Dyscalculia - *Inability to do math*
Dysygraphia - *Inability to write*
Dyslexia - *Inability to read*

Associated Reactions: One part of the body moves involuntarily because of the movement of another part of the body: for instance, the left arm may move when the right arm moves or one arm may move when the head turns.

Auditory Perceptual Problem: Trouble taking information in through the sense of hearing and/or processing that information. People with this problem frequently hear inaccurately. A sequencing of discrimination error can change the meaning of an entire message: for example, one might hear "I ran to the car" instead of "I rented the car." People with auditory handicaps frequently do not hear unaccented syllables. They may hear "formed" instead of "performed," "seven" instead of "seventy." Some auditory perceptual handicaps are:

Auditory discrimination problem - *Trouble telling the difference between similar sounds, such as "th" and "f" or "m" and "n"; hearing "seventeen" instead of "seventy"; hearing an angry rather than a joking tone of voice.*

Auditory figure-ground problem - *Trouble hearing a sound over background noise, for example, being unable to hear the telephone ring when one is listening to the radio, or having difficulty hearing someone talking at a party when music is playing.*

Auditory sequencing problem - *Trouble hearing sounds in the correct order, for example, hearing "nine-four" instead of "four-nine"; hearing "treats" instead of "street"; hearing garbled music because the melody is perceived out of order.*

Catastrophic Response: An involuntary reaction to too many sights, sounds, extreme emotions or other stimuli. This may result in losing one's temper, becoming dazed or unaware of one's surroundings, or "freezing" for a short time.

Cognitive Disorganization: Difficulty thinking in an orderly, logical way. People with this problem often jump to conclusions and have difficulty planning tasks.

Crossing the Midline: Trouble with moving one's limbs across the center of the body. This could include: difficulty writing across a page, sweeping a floor, or controlling a steering wheel.

Directional Problem: Trouble automatically distinguishing left from right; learning north, south, east, west; learning the layout of a large symmetrical building.

Disinhibition: Difficulty in behaving appropriately in an automatic way. This is a problem with the self-governing part of the brain that stops one from doing such things as laughing at the wrong time, talking aloud to oneself, coughing without covering the mouth. A disinhibited person might abruptly interrupt a conversation or talk aloud to himself in public.

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LEARNING DISABILITY SUBTYPES
(continued)

Intersensory Problem: Trouble using two senses at once or associating two senses, for instance, not realizing that the letter "d" which is seen, is the same as the sound "d" when it is spoken; being unable to feel someone tap you on the shoulder while you are reading; being unable to listen to conversation and drive at the same time.

Memory Problem, Short-term: Trouble remembering: names, numbers, specific facts, what happened a few minutes ago. A poor memory makes academic success difficult.

Motor Problem: Trouble moving one's body efficiently to achieve a certain goal. Some motor problems are:

Perceptual Motor Problems - *Trouble performing a task requiring coordination because of inaccurate information received through the senses. This may result in clumsiness, difficulty in participating in simple sports, awkward or stiff movements.*

Visual Motor Problem - *Trouble seeing something and then doing it: learning a dance step while watching a teacher, copying something off a blackboard, throwing something at a target.*

Auditory Motor Problem - *Trouble hearing something and then doing it: following verbal directions. dancing to a rhythmic beat, taking notes in a lecture.*

Perceptual Problem: Trouble taking information in through one's senses and/or processing that information.

Proprioceptive Perceptual Problem: Trouble knowing where one is in space. A person with this problem might not be able to tell the position of her limbs with her eyes closed.

Soft Neurological Signs: Signs of central nervous system dysfunction that can be observed: staring, turning the head instead of moving the eyes, inability to look people in the eye, not holding the head straight, being easily startled.

Tactile Perceptual Problem: Trouble taking information in through the sense of touch. Some tactile handicaps are:

Immature Tactile System - *People with this problem dislike being touched lightly, but crave pressure touch, such as being hugged hard or huddling with knees to their chest. Until the immaturity is overcome, tactical discrimination cannot develop.*

Tactical Defensiveness - *Tendency to avoid being touched because of an immature tactile system.*

Tactile Discrimination Problem - *Trouble feeling the difference between similar objects, such as bond or regular typing paper, light or heavy sandpaper, silk or cotton, ripe or unripe cantaloupe.*

Tactile Pressure Problem - *Trouble judging the right amount of pressure needed to perform motor acts: holding an egg in two fingers without breaking or dropping it, tapping someone playfully rather than hitting them.*

LEARNING DISABILITY SUBTYPES
(continued)

Vestibular Perceptual Problem: Problem with one's sense of balance, for example, a tendency to lose one's footing on a curb.

Visual Perceptual Problem: Trouble taking information in through the sense of sight and/or processing that information. Some of these are:

Visual Figure-Ground Problem - *Trouble seeing a specific image within a competing background: finding a face in a crowd, finding keys on a crowded desk, picking out one line of print from the other lines in a book. People with this problem cannot see things that others can see; to them the keys on a crowded desk are not there.*

Visual Sequencing Problem - *Trouble seeing things in a correct order, for instance, seeing letters or numbers reversed, seeing two cans reversed on a shelf of cans. The person with this problem actually sees the word incorrectly. He sees "was" instead of "saw."*

Visual Discrimination Problem - *Trouble seeing the difference between two similar objects, such as, the letters, "v" and "u" or "e" and "c"; the difference between two shades of one color or two similar types of leaves. The persons with this problem sees the two similar objects as alike.*

Depth Perception Problem - *Trouble perceiving how far away (or near) an object may be: for instance, you may not know how close the fork is to your hand or how far to reach to put a glass of water on the table.*

From: Dale Brown, Rehabilitating the Learning Disabled Adult.

APPENDIX D

ICD-9 CODES FOR LEARNING DISABILITIES

ICD-9 CODES FOR LEARNING DISABILITIES

315 Specific Delays in Development

Excludes: that due to a neurological disorder (320.0-389.9)

315.0 Specific Reading Disorder

315.00 Reading Disorder, Unspecified
315.01 Alexia
315.02 Developmental Dyslexia
315.09 Other
Specific Spelling Difficulty

315.1 Specific Arithmetical Disorder
Dyscalculia

315.2 Other Specific Learning Difficulties

Excludes: Specific Arithmetical Disorder (315.1)
Specific Reading Disorder (315.00-315.09)

315.3 Developmental Speech or Language Disorder

315.31 Development Language Disorder
Developmental Aphasia
Word Deafness

Excludes: Acquired Aphasia (784.3)
Elective Mutism (309.83, 313.0, 313.23)

315.39 Other
Developmental Articulation Disorder
Dyslalia

Excludes: Lisping and Lalling (307.9)
Stammering and Stuttering (307.0)

315.4 Coordination Disorder
Clumsiness Syndrome
Dyspraxia Syndrome
Specific Motor Development Disorder

315.5 Mixed Development Disorder

315.8 Other Specified Delays in Development

315.9 Unspecified Delay in Development
Developmental Disorder NOS

APPENDIX E

INFORMAL LEARNING DISABILITY CHECKLISTS

LD CHARACTERISTICS CHECKLIST

3/90

NAME:_____ DATE:_____

COMPLETED BY:_____ SETTING:_____

RELATIONSHIP TO CLIENT:_____

LENGTH OF RELATIONSHIP:_____

TENTATIVE VOCATIONAL GOAL:_____

Directions: This checklist may be completed during an interview or given to parents, teachers or other professionals to complete. Informants should rate each item according to the frequency of the behavior. Specific examples or comments should be provided when possible.

1 Seldom or Never
2 Often
3 Very Often
0 No opportunity to observe

Counselor Use Only: Circle the number of any characteristic which could be considered a possible vocational handicap.

I. ATTENTION

____ 1. Fidgets - feels restless

____ 2. Has difficulty remaining seated when required to do so

____ 3. Easily distracted

____ 4. Has difficulty awaiting turn in games or group situations

____ 5. Blurts out answers to questions before they have been completed

____ 6. Has difficulty following through on instructions from others

____ 7. Has difficulty sustaining attention in tasks or leisure activities

____ 8. Shifts from one uncompleted activity to another

____ 9. Has difficulty working independently

____ 10. Talks excessively

____ 11. Interrupts or intrudes on others

____ 12. Does not seem to listen to what is being said

____ 13. Loses things necessary for tasks or activities at school, work, or at home

____ 14. Engages in physically dangerous activities without considering possible consequences

COMMENTS: _____

II. REASONING/PROCESSING

____ 15. Makes poor decisions

____ 16. Makes frequent errors

____ 17. Has trouble using previously learned information in a new situation

____ 18. Has delayed verbal responses

____ 19. Takes longer to do a task than others

____ 20. Has difficulty adjusting to changes in schedule

____ 21. Has difficulty adjusting to changes in steps in a job or task sequence

____ 22. Has difficulty adjusting to changes in personnel

____ 23. Has difficulty adjusting to changes in working conditions (e.g., different room)

____ 24. Has time management difficulties (e.g., attendance, meeting deadlines)

____ 25. Requires concrete demonstrations

____ 26. Requires extra practice sessions

____ 27. Has difficulty following oral instructions

____ 28. Has difficulty following written instructions

____ 29. Has difficulty following a map or diagram

COMMENTS: _____

III. MEMORY

____ 30. Has difficulty answering questions regarding personal history

____ 31. Has difficulty repeating information recently heard

____ 32. Has difficulty repeating information recently read

____ 33. Has difficulty retaining learned information for more than six months, may be visual or audi...

____ 34. Has difficulty following multiple directions

____ 35. Has difficulty performing tasks in correct sequence

COMMENTS: _____

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IV. INTERPERSONAL SKILLS/EMOTIONAL MATURITY

____ 36. Interacts inappropriately with supervisors/teachers of same sex

____ 37. Interacts inappropriately with supervisors/teachers of opposite sex

____ 38. Responds inappropriately to nonverbal cues

____ 39. Has difficulty accepting new tasks without complaint

____ 40. Upsets or irritates others

____ 41. Sits and does nothing (hypoactive)

____ 42. Uses eye contact ineffectively

____ 43. Is too aggressive

____ 44. Is withdrawn: Avoids social functions

____ 45. Does not follow classroom or workplace "rules"

____ 46. Has difficulty making and keeping friends

____ 47. Displays a lack of awareness of consequences of behavior

____ 48. Has difficulty accepting constructive criticism

____ 49. Has difficulty getting help from others

____ 50. Exhibits signs of poor self-confidence

____ 51. Has difficulty working in close proximity to others

____ 52. Has difficulty working in isolation

COMMENTS: _____

V. COORDINATION/MOTOR FUNCTION

____ 53. Has difficulty performing gross motor tasks (e.g., driving, lifting)

____ 54. Has difficulty performing fine motor tasks

____ 55. Confuses left-right

____ 56. Has difficulty keeping balance

____ 57. Has slow reaction time

____ 58. Has limited endurance/stamina for motor activity

COMMENTS: _____

VI. COMMUNICATION: Oral Language

____ 59. Substitutes words inappropriately

____ 60. Uses short, simple sentences

____ 61. Has difficulty explaining things coherently

____ 62. Has difficulty communicating on the phone

COMMENTS: _____

VII. READING

____ 63. Has difficulty reading aloud

____ 64. Has difficulty reading newspaper want ads

____ 65. Has difficulty reading job applications

____ 66. Has difficulty reading signs in the environment

____ 67. Reading comprehension is below 9th grade level

COMMENTS: _____

VIII. WRITING/SPELLING

____ 68. Has difficulty writing legibly

____ 69. Has difficulty copying

____ 70. Displays poor spelling skills

____ 71. Has difficulty communicating through writing

____ 72. Has difficulty with paragraph writing

COMMENTS: _____

IX. MATH CALCULATION/APPLICATION

____ 73. Has difficulty managing money

____ 74. Has difficulty balancing checkbook

____ 75. Has difficulty performing math calculations

____ 76. Math skills are below 9th grade

COMMENTS: _____

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LEARNING DISABILITY CHECKLIST

Developed by: Linda Donnels and Karen Franklin, George Washington University, 2121 I St., NW, Suite 401, Washington, DC 20052.
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A learning disabled person may exhibit several or many of the following behaviors:

- Demonstrates marked difficulty in reading, writing, spelling and/or using numerical concepts in contrast with average to superior skills in other areas.
- Has poorly formed handwriting - may print instead of using script; write with inconsistent slant; have difficulty with certain letters; space words unevenly.
- Has trouble listening to a lecture and taking notes at the same time.
- Is easily distracted by background noise or visual stimulation; unable to pay attention; may appear to be hurried or anxious in one-on-one meetings.
- Has trouble understanding or following directions; is easily overwhelmed by a multiplicity of directions or overstimulation; may not understand information the first time it is given and may need to have it repeated.
- Confuses similar letters such as "b" and "d", or "p" and "q"; confuses the order of letters in words repeating was for saw, teh for the; may misspell the same word several different ways in the same composition.
- Omits or adds words, particularly when adding or reading aloud.
- Confuses similar numbers such as three and eight, or six and nine, or changes the sequence of numbers such as 14 and 41; has difficulty copying numbers accurately and working with numbers in columns.
- Exhibits an inability to stick to simple schedules; repeatedly forgets things, loses or leaves possessions, and generally seems "personally disorganized."
- Appears clumsy or poorly coordinated.
- Seems disorganized in space - confuses up and down, right and left; gets lost in buildings; is disoriented when familiar environment is rearranged.
- Seems disoriented in time - i.e. is often late to class, unusually early for appointments, or unable to finish assignments in the standard time period.

- o Displays excessive anxiety, anger, or depression because of the inability to cope with school or social situations.
- o Misinterprets the subleties in language, tone of voice, or social situations.

Note: The Classroom Screening Instrument appearing on the following pages is from the article "Prevalence and Characteristics of Learning Disabilities Found in Second Grade Children," by J.H. Meier in the Journal of Learning Disabilities, Volume 4, Number 1, 1971.

CLASSROOM SCREENING INSTRUMENT: 80 Behavioral Indices, and the Frequencies Checked for ILD Children (N = 284) by Their Teachers

Behavioral Indices	Frequency
1. Holds book too close (6 inches or less)	49
2. Avoids work requiring concentrated visual attention	112[a]
3. Head forward or tilted to one side (more than 15°) when reading or engaged in other tasks	52
4. Moves head or trunk excessively during visual tasks (instead of moving eyes)	55
5. Uncontrollable rapid jumping of eyes	24
6. Rubs eyes often when reading or engaged in other visual tasks	41
7. Facial contortions with visual tasks (including squint)	73
8. Seems to have pop-eyes	8
9. Eyes are crossed	7
10. Unable to learn the sounds of letters (can't associate proper phoneme with its grapheme)	117[a]
11. Doesn't seem to listen to daily classroom instructions or directions (often asks to have them repeated whereas rest of class goes ahead)	173[b]
12. Can't correctly recall oral directions (e.g., item 11 above) when asked to repeat them	153[b]
13. Doesn't seem to comprehend spoken words (may recognize the words separately but not in connected speech)	59
14. Can't name letters when they are pointed to	36
15. Can't pronounce the sounds of certain letters	95[a]
16. Mild speech irregularities (can't pronounce common second grade words)	67
17. Immature speech patterns (still uses much baby talk)	47
18. Lips apart when at rest (mouth breathing)	52
19. Tongue thrust forward between teeth and often beyond lips (especially when using hands for writing, cutting, etc.)	53
20. Unable to correctly repeat a 7-10 word statement by the teacher (omits or transposes words)	124[a]
21. Errors in oral expression – confuses prepositions such as over, under, in, out, etc.) ("Put water under a fire to boil it.")	71
22. Transposes sounds in words (says "nabana" instead of "banana")	40
23. Can't recite the days of the week in correct order	70
24. Underactive (seems lazy, couldn't care less) in classroom and on playground	72
25. Is slow to finish work (doesn't apply self, daydreams a lot, falls asleep in school)	160[b]
26. Overactive (can't sit still in class – shakes or swings legs, fidgety)	96[a]
27. Tense or disturbed (bites lip, needs to go to the bathroom often, twists hair, high strung)	101[a]
28. Occasional lapses of contact with classroom activities (has "spells" when hands and/or body shakes, eyes blink or don't seem to see)	37
29. Very small for age (less than 36 inches tall at age 7)	22
30. Misses school frequently (average five days a month) due to illness.	18
31. Poor coordination (can't skip or hop on one foot more than 3 times)	69
32. Fingers tremble when hands held forward and arms supposed to be steady	37
33. Accidentally breaks and tears things (clumsy, awkward)	73
34. Unusually short attention span for daily school work	190[c]
35. Easily distracted from school work (can't concentrate with even the slightest disturbances from other student's moving around or talking quietly)	187[c]

36.	Mistakes own left from right (confuses left-hand with right-hand side of paper)	111[a]
37.	Often begins tasks with one hand and finishes with the other	19
38.	Can't tie shoes and/or hold scissors properly	34
39.	Loses way in school (gets turned around and doesn't know which way to go)	15
40.	Improper pencil grasp (clutched in fist, held too lightly or presses so hard as to break lead and tear paper)	77
41.	Draws circles clockwise	78
42.	Poor drawing of diamond compared with peers' drawing	102[a]
43.	Poor drawing of crossing, wavy lines compared with peers' drawing	131[a]
44.	Poor drawing of a man compared with peers' drawings	121[a]
45.	Poor handwriting compared with peers' writing	147[b]
46.	Reverses and/or rotates letters, numbers and words (writes "p" for "q" "saw" for "was," "2" for "7," "16" for "91") far more frequently than peers	148[b]
47.	Does very poorly in writing spelling tests compared with peers	183[b]
48.	Unable to learn the forms of letters (can't recognize letters when they are named)	43
49.	Reverses and/or rotates letters and numbers (reads "b" for "d," "u" for "n," "6" for "9") far more frequently than most peers	135[a]
50.	Reverses and/or rotates words and numbers (reads "tac" for "cat," "left" for "felt," "327" for 723") far more frequently than peers	79
51.	Can read better when print is upside down	8
52.	Loses place more than once while reading aloud for one minute	107[a]
53.	Omits words while reading grade-level material aloud (omits more than one out of every ten)	126[a]
54.	Reads silently or aloud far more slowly than peers (word by word while reading aloud)	194[c]
55.	Points at words while reading silently or aloud	140[b]
56.	Substitutes words which distort meaning ("when" for "where")	200[c]
57.	Can't sound out or "unlock" words	182[b]
58.	Can read orally but does not comprehend the meaning of written grade-level words (word-caller)	123[a]
59.	Can't follow written directions, which most peers can follow, when read orally or silently	186[b]
60.	Reading ability at least ¾ of a year below most peers	180[b]
61.	Tells barren or incoherent stories (they don't even make sense to peers)	49
62.	Has trouble telling time	175[b]
63.	Doesn't understand the calendar (what day follows Wednesday, etc.)	79
64.	Difficulty with arithmetic (e.g., can't determine what number follows 8 or 16; may begin to add in the middle of a substraction problem)	132[a]
65.	Cannot apply the classroom or school regualtions to own behavior whereas peers can	105[a]
66.	Excessive inconsistency in quality of performance from day to day or even hour to hour	121[a]
67.	Has trouble organizing written work (seems scatterbrained, confused)	159[b]
68.	Seems very bright in many ways but still does poorly in school	141[a]
69.	Repeats the same behavior over and over	159[b]
70.	Doesn't get along with most peers (can't make or keep friends, is picked on, wants to change rules, poor loser)	91
71.	Shows excessive affection toward peers or adults in school or playground	47
72.	Unusually aggressive toward peers or adults in school or playground	52
73.	Unusually shy or withdrawn	59
74.	Cries easily or often for no apparent reason	28
75.	Afraid of many things which most peers don't fear	21
76.	Explodes for no apparent reason	38
77.	Demands unusual amount of attention during regular classroom activities	110[a]
78.	Seems quite immature (doesn't act his/her age)	122[a]
79.	Seems insensitive to others feelings	59
80.	Objects or refuses to go to school either for no apparent reason or because of fear of failure	9

[a]Checked for at least 1/3 of LD children.

[b]Checked for at least 1/2 of LD children.

[c]Checked for at least 2/3 of LD children.

APPENDIX F

SELECTED RESOURCES FOR PROVIDING INSTRUCTION TO LEARNING DISABLED ADULTS

SELECTED RESOURCES FOR PROVIDING INSTRUCTION TO LEARNING DISABLED ADULTS

- Eric Clearinghouse on Handicapped and Gifted Children
  The Council of Exceptional Children
  1920 Association Drive
  Reston, VA 22091-1589

- Heath Resource Center
  American Council on Education
  One Dupont Circle, Suite 800
  Washington, D.C. 20036

- IBM National Support Center
  for Persons With Disabilities
  P. O. Box 2150
  Atlanta, GA 30301-2150

- Learning Disability Training Project
  University of Alabama, at Birmingham School of Education
  Learning Disabilities Project
  University Station
  Birmingham, Alabama 35294

- Learning Resources Network
  1554 Hayes
  Manhattan, KS 66502

- U.S. Government Clearinghouse on Adult Education and Literacy
  U.S. Department of Education
  Division of Audit Education and Literacy
  Washington, D.C. 20202-7240

APPENDIX G

GUIDELINES FOR PROVIDING WORK-RELATED TRAINING TO LEARNING DISABLED PERSONS

GENERAL RECOMMENDATIONS AND ACCOMMODATIONS for the LEARNING DISABLED INDIVIDUAL seeking EDUCATION, TRAINING AND/OR EMPLOYMENT

Work is for everyone, disabled or not. Because of federal and state laws regulating the education and employment of the handicapped, more and more individuals with learning disabilities are accessing post-secondary education, training, and/or employment opportunities. In helping these individuals obtain appropriate skills and secure employment, we are faced with a need to provide reasonable accommodations, thus allowing for maximum opportunities within education, training, and/or employment environments. The following is a basic list of suggestions that will help in counseling and working with the learning disabled individual in education, training, and/or employment settings.

Ensure that the individual understands the types of learning disabilities that have been diagnosed and can explain them in a clear, reasonable manner.

Educate the individual as to opportunities available under the laws of the state and federal government.

Be aware, and make sure the individual is aware, of his/her best learning modality and that he/she can identify and utilize reasonable accommodations related to the learning disability.

Encourage the individual to speak about the disability with school counselors, special student services personnel, employers, immediate supervisors, and co-workers when appropriate.

Alert the individual of techniques of handling negative responses; make him/her aware of available faculty and/or personnel who might be more sensitive to his/her needs.

If permissible, alert faculty and/or employers to strategies which might be helpful to the individual in accommodating for learning difficulties.

When in a training or classroom situation, recommend that the individual carry a reduced load (part-time is ideal for beginning learning disabled students).

Identify and train in areas of previous success or knowledge; take a specific weak or difficult area, start at a lower level so the individual is comfortable, then overtrain, advancing slowly to ensure competence and success.

Use materials that relate to experiences; design or use special workshops/activities that help break down subject matter; help individual communicate acquired knowledge through other methods (i.e., oral, taped, or recorded responses, or experimental/demonstrations).

Break tasks into small, sequential steps; show how first, then teach steps and application; keep schedules similar throughout the day or week, and encourage the individual to set daily/weekly schedules, identifying tasks for completions.

Suggest tutoring, study groups and/or mentoring during a learning process; reduce long written and/or reading assignments; keep oral discussion on target; speak directly to the individual, taking time to see if there is understanding; decrease the amount of oral or written directions given at a time.

Encourage the use of aids and tools - calculators, highlighter pens, extra worksheets, computerized learning, records, tape recorders, films, demonstrations, maps, charts, experiences, fingers, rulers, etc.; use visual aids whenever possible, helping to create a picture in the "minds's eye".

Examinations for employment, college entrance, subject competency and the like should be administered with the appropriate accommodations for the type of disability; shorter, untimed tests should be utilized which test only the subject at hand, not extras such as grammar or spelling.

When trying to locate information, especially in the newspaper or phonebook, the individual may have difficulty reading the small print or may reverse when trying to copy.

Individuals with learning disabilities sometimes have difficulty making first impressions, an important item when interviewing or meeting someone for the first time, however, not particularly an important skill to maintain a job or a friendship.

Show by example; help the individual prepare sample application forms, resumes, cover letters, letters of inquiry, and in general sample written copy which allows for a more independent level of functioning.

Provide information that allows the individual to assess skill levels, choose appropriate education or training facilities, and access the job market competently.

Remember, do not embarrass, insinuate laziness, or discourage publicly or privately; behavioral and emotional problems are the result of the disability, not the cause; do not excuse from normal responsibility or normal tasks, accommodations in how to perform the tasks should be implemented; be aware that careless errors may be the result of the learning disability.

Finally, be sensitive to the individual and help provide the necessary support by identifying the strong learning modality and providing appropriate accommodations for the weaker modali'ies. By creating an atmosphere in which the individual will feel positive about learning, whether it be academic or job related, many successes will be realized.

Prepared by Nancie Payne, based on:

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APPENDIX H

CHARACTERISTICS, VOCATIONAL IMPACTS AND CAMS

LEARNING DISABILITIES: CHARACTERISTICS, VOCATIONAL IMPACT AND CAMS

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Due to the hidden nature of learning disabilities, it is often difficult to identify the characteristics that might limit success in an education or an employment setting. With the LD population, it is the behaviors or characteristics of the individual that have the greatest impact on successful functioning in any new environment, rather than the academic deficits that are typically used to diagnose and describe the population.

The following is a listing of specific behaviors characteristic of LD, examples of the possible vocational impact of each, and possible Compensations, Accommodations, Modifications, and Strategies (CAMS). The vocational impact statements may be used to assist in career counseling; implementation of the CAMS will maximize success in the environment.

LD CHARACTERISTICS	VOCATIONAL IMPACT	CAMS
ATTENTION Diagnostic Statistical Manual-III-R (1987) Criteria		
1. Fidgets - feels restless	Difficulty with jobs which are primarily sedentary (clerical, benchwork) Difficulty concentrating on tasks Agitates co-workers/supervisors Increases risk for accidents Low stress tolerance	Build movement into activity Let client work standing up Chart/time productivity or work rate
2. Has difficulty remaining seated when required to do so	Inability to work in sedentary job Difficulty concentrating on and completing a task Low stress tolerance	Build movement into activity Let client work standing up Chart/time productivity or work rate
3. Easily distracted	Difficulty working in clerical pool or group setting Problems around machinery, breakroom, high traffic areas in office Could not work with Muzak or by window Increased risk for accidents, mistakes, and misunderstanding of instructions, etc. Reduces rate of job performance and production Reduces and/or interferes with concentration to task Produces job fatigue and/or emotional stress	Highlight significant characteristics of the activity Minimize distractions Isolate client to work site Use earphones/plugs Provide step-by-step checklist, ask client to record own behavior

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